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ABSTRACT

These materials were developed in response to the Utah State Board of Education's new high school graduation requirements, particularly as they relate to the identification, teaching, and assessment of certain basic functional competencies. The document has been compiled as a guide and aid to mathematics teachers. Thirty competencies have been identified in these materials to assist adult and high school students in meeting their functional mathematics needs in everyday life. This booklet is designed to meet local program criteria. It is a written set of instructions and a model with step-by-step procedures that assist each teacher in being creative in using the document to fit his or her desired program. Included are a pre-test, review exercises, and a post-test for each identified basic skill. (MP)

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# ADULT EDUCATION BASIC SKILLS TASK FORCE:

# ARITHMETIC COMPUTATION

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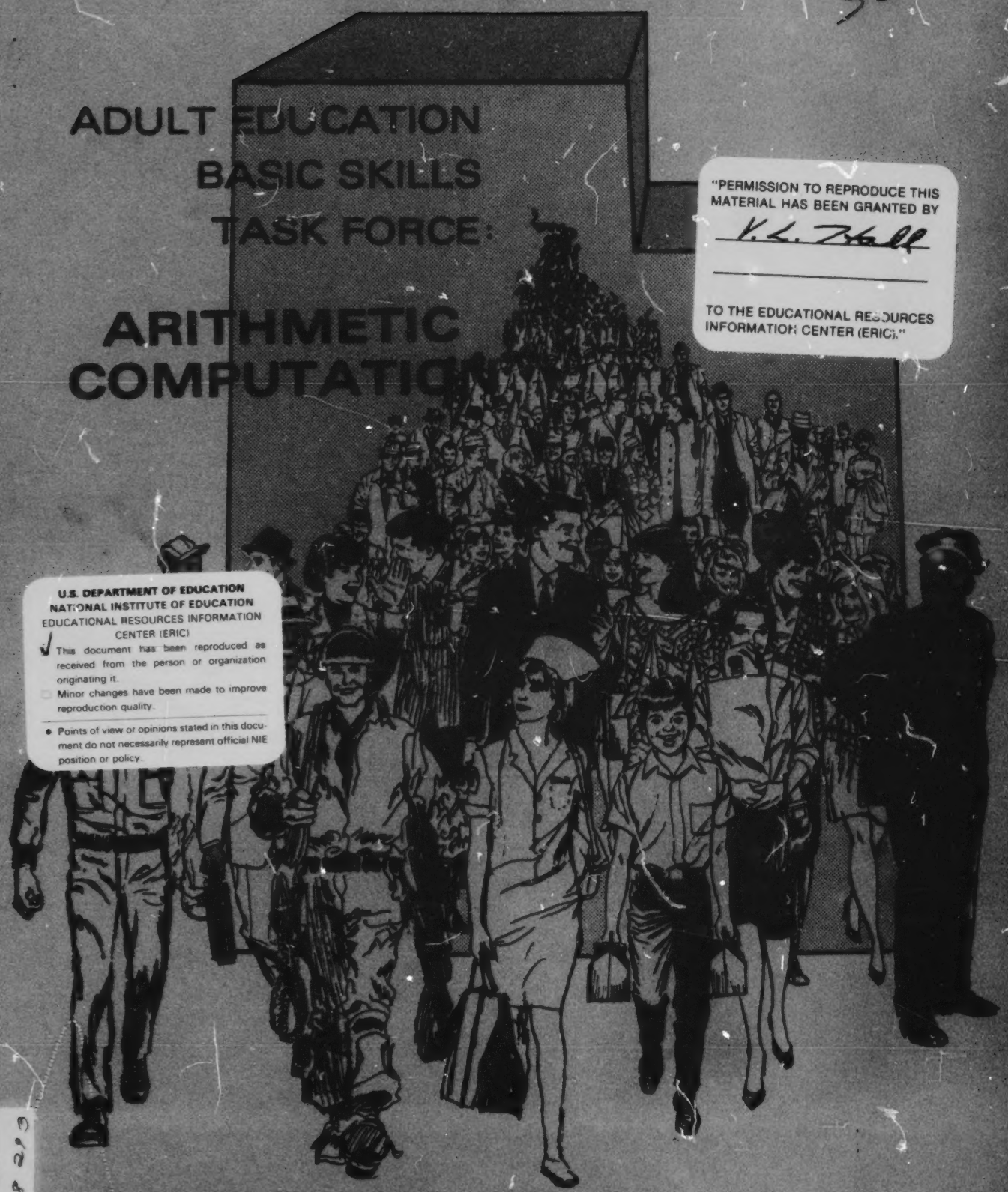

Utah State Office of Education 1982

SE 038 219

# ADULT EDUCATION

# BASIC SKILLS TASK FORCE:

# ARITHMETIC COMPUTATION


UTAH STATE OFFICE OF EDUCATION

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1982

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## FOREWORD

The following materials have been developed in response to the Utah State Board of Education's new high school graduation requirements, especially as these requirements relate to the identification, teaching, and assessment of basic functional competencies, i.e., speaking, listening, reading and writing; computation (arithmetic); processes and structure of democratic governance; consumer economics and problem solving. Therefore, these materials are being disseminated to assist local programs in establishing a basic competency curricula for adult education students.

Walter D. Talbot
State Superintendent of
Public Instruction

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# INTRODUCTION

In January of 1977, the Utah State Board of Education approved new state high school graduation requirements. The new requirements place increased emphasis on the demonstration of functional competencies and the development of individual education plans for each student. Specifically, these requirements are:

(1) Students shall demonstrate "functional competencies in the following basic skills...:

(a) Reading, writing, speaking, and listening.

(b) Computation (arithmetic).

(c) Processes and structure of democratic governance.

(d) As a consumer of goods and services.

(e) Problem solving."

(2) "An individual plan for the projected educational program to be pursued by each student during his or her membership in the school will be developed cooperatively by the student, designated school personnel, and parents. This plan will be guided by (Graduation Requirements) and individual student needs."

(State High School Graduation Requirements and State Program of Studies in Secondary Schools, pages 2, 3, & 4).

Given these requirements, it was early recognized that if the Demonstrated Functional Competencies (DFC) requirement were to be moved from policy to successful practice, a considerable amount of developmental work would have to be accomplished, especially as relates to adult students. Why? Because adult students attend adult basic and adult high school education classes voluntarily. Therefore, an urgent need developed to provide local adult education programs with assistance in two areas:

(1) The content requirements of DFC, i.e., curricula, materials, assessment instruments, etc.

(2) The process dimensions and/or ramifications of DFC requirements, i.e., the means of integrating basic and functional competency requirements with the learner's experiences, goals and aspirations.

In defining DFC as a process, local adult education programs are faced with implications for the instructional program that are profoundly different from those that result when DFC are expressed as a series of predetermined content areas. In a content-oriented approach, the student chooses from among several subjects according to his interests or needs. Each subject comes with clearly delineated objectives, often scope and sequence charts, and evaluation tools: when you do x, y, and z, you will be competent in the subject. The objectives are in effect imposed upon the student, and his

exercise of choice is restricted to deciding which subjects he wishes to study. The criteria for competency are likewise predetermined, and the student has no input in either the development of the objectives or the definition of competency.

In a process-oriented approach, however, the learner himself helps to determine not only the general subject areas (e.g., occupational knowledge, consumer economics, health, governance), but also the objectives or steps within that subject area which he wishes to master. It is the learner, not the content area, which defines the competency to be achieved.

Because both of the above approaches (content and process) are required and necessary for effective programming in the adult basic and adult high school programs, it was determined that it would be impossible to successfully implement the DFC and individual education plan requirements of the high school graduation standards unless adult basic education teachers and students were involved in developing and implementing a demonstrated functional competency (DFC) curricula.

Therefore, the Utah State Office of Education, Adult Education and Community Services Unit, identified and charged five representative task forces of adult basic education teachers to; (1) identify functional competencies and/or understandings that are needed to function in day to day adult responsibilities, and (2) identify, develop, and/or organize functional curricula materials for teaching the identified functional competencies and understandings, i.e., (a) reading, writing, speaking, and listening (b) computation (arithmetic), (c) processes and structure of democratic governance, (d) as a consumer of goods and services, and (e) problem solving.

In identifying and charging the members of the five task forces, the following "operational" parameters were established to direct the activities of each task force.

(1) The activities, curricula, outcomes and recommendations for each task force and basic skill area should focus on students who are eighteen years of age or older and who are voluntarily seeking and/or attending basic skills improvement programs.

(2) The task force activities, materials and recommendations should be reported in sufficient copy, detail, and simplicity, to be functionally disseminated and diffused throughout the state.

The results of one of these task forces are reported in this report. The results of the other four task forces are reported in similar reports. Therefore, the purpose of this report is to assist local adult education programs in more effectively teaching and assessing students achievement of basic functional competencies, especially given the voluntary nature of an adult student's attendance in adult basic and adult high school classes.

## PROFILE OF AN EFFECTIVE TEACHER OF ADULT STUDENTS

Teachers of adults represent the best in the teaching profession. They know that adult students attend school voluntarily and that these students will not return to the classroom if their educational needs are not being satisfied. They are able to identify quickly the personal and emotional problems and needs of students. They correct student errors tactfully and use teaching moments to positively clarify and reinforce the learning process and the good things that students are doing. They build on the day to day successes of students, thus assisting in the building of student confidence and aspirations. They listen to each student's viewpoint and know that friendliness and empathy are as important to the student as convincing the student of their opinion on a subject.

Teachers of adults go the extra mile to be pleasant. They help students individually and guard a student's confidence. They know that adult students are sensitive and, in some cases, even embarrassed about their lack of education. They know that they must help students resolve problems, academic and other, that interfere with the learning process. Teachers of adults build and reinforce a student's support mechanisms. They treat each student as an individual and learn to know each individual as a person.

Teachers of adults help students set and achieve meaningful and obtainable objectives, education and other. They assist students in developing the confidence that is essential to proceed with educational tasks with assurance. They anticipate student questions, provide helpful information and give clear instructions and directions. They assess student progress and give the learner a feeling of satisfaction and accomplishment. They know how to improvise for effective instruction if the right books and instructional materials are not readily available.

Teachers of adults know how to put students at ease; thereby, creating a climate that makes it easy for students to concentrate and learn. They create an environment in which students feel needed and loved. They accept new situations and tasks readily; and they will do all within their power to assure the adult learner of daily success. They believe that a student's positive feelings about school will overcome the fears and insecurity of past failures.

Teachers of adults organize and set curricula and instructional priorities according to the needs and learning styles of each student. They achieve pleasure when students achieve and suffer when students fail. They are patient and kind and have learned how to both humanize and individualize the learning process.

## WHAT NEW TEACHERS OF ADULTS NEED TO KNOW

If you are teaching adults for the first time - or if you are a newcomer to the field - you may be puzzled and concerned about many aspects of your profession. In an effort to provide you with helpful information for alleviating some of these concerns and questions, the following information should be useful for planning and implementing a basic skills curricula for adult students.

I. Differences Between the Education of Children and Youth and the Adult

Dr. Harry L. Miller, in his book Teaching and Learning in Adult Education, states that, "There are considerable differences between the enterprise devoted to the large and necessary task of socializing the young and that which pays attention to the learning needs of the world of adults: differences in purpose, scope, intensity, and available resources, and, consequently, wide differences in the appropriateness of the method" (p. 2). He then goes on to classify the differences into three areas; heterogeneity, structure, and maturity (p. 4-5).

A. Heterogeneity

The learning tasks which children are called upon to perform are usually common to all children, but this is not necessarily so with adults. All children are different, but the differences between adults in any group are greater than those of children ---greater differences of needs, of purposes, and of experiences. The reasons why an adult may want or need to learn something are different from those of children. Adults attend classes (learning centers) for various reasons---some of which may not even be related to the subject matter. The identification of these needs (and the satisfaction of them) takes a very different approach. Because of these great differences, the adult "teacher" must learn how to create an atmosphere in which the needs and purposes can be freely identified. Once the identification has been made, the "students" must be helped to find ways by which each can be satisfied.

Implications for teaching: Adults, in any learning situation, must be involved in planning their own learning experiences. The adult is an impatient learner; he feels a sense of hurry, a shortness of time in which to learn. Learning must be relevant and have immediate application. Adults frequently come to classes expecting to hear "correct answers" to their problems; but if such answers are given, they are usually rejected. Adults have to be brought to the understanding that learning is an active doing and participating experience and not a passive process.

B. Structure

Learning, for children, is primarily a job of identifying new things, new events, or new relationships---things with which they have had little or no previous experience. The adult, on the other hand, is an experienced veteran. There is little that he can learn that he may not have had some kind of previous knowledge, and he comes to the learning situation with a highly complicated set of expectations. These experiences may distort as frequently as they may enrich his learning. An adult, learning a new concept, may change it to fit into his own organized body of preconceived ideas.

Implications for teaching: Utilize the background and experience of the participants in the teaching situation. The adult must acquire and retain a high degree of self-confidence and he must have a feeling of success to a greater degree than children. Adults learn a great deal from each other. Adult students have been conditioned to believe that their learning capabilities have decreased with age, and they need reassurance and proof that this is not so. They generally have a stronger resistance to change than do children and youth.

C. Maturity

Someone is usually in "charge" of the education of children and youth. The adult, on the other hand, is in the habit of making his own decisions; his mistakes and his achievements are his own. An appropriate difference would be that in adult education an adult is helped to understand what his wants are and is given an opportunity to look at alternatives from which he can choose in the satisfaction of these wants. Teaching adults is like being a "learning facilitator" rather than a teacher in the traditional sense. The "facilitator" gives each adult an opportunity to decide what it is he wants to learn and how he should go about learning it.

Implications for teaching: The decision to learn or to return to school is made by the adult himself. The teacher is seldom a person with authority over his students. Adult classes are usually very informal. They may be a kind of "town hall" discussion session.

Source: Unknown

II. Facts About Adult Education Which May Be Different From the Education of Children and Youth

A. The decision to learn or to return to school is made by the adult himself.

1. Attendance is voluntary and determined by a practical motive; the adult is free to leave if he feels he is not getting what he wants.

2. The adult is always ready to learn if the materials presented bears upon his needs or deals with the concrete, practical problems of community life.

3. The adult needs to see an immediate benefit to himself in what he learns.

4. The content of what is taught must help prepare the adult to use immediately what he has learned or experienced in class and to assist him in the problems he faces from day to day.

5. The adult learner is usually interested in the immediate usefulness of new knowledge.

B. Adult Education is a part-time activity.

1. Adult learning experiences are, in most cases, supplementary or complementary to some major occupation other than education.

2. The adult has handicaps which he must overcome---physiological changes, psychological handicaps of prejudice, set patterns and habits, fatigue resulting from a full day's work prior to class.

3. The adult needs more time to learn.

C. The teacher is seldom a person with <u>authority</u> over his students.

1. The adult is not content to be a spectator; he needs to participate in the activities of the class frequently during a session.

D. The adult is different from the child or youth. He has had more experiences; he has developed opinions of his own; he has acquired practical know-how.

1. Students bring a mature, rich experience to class which influences their learning. It is imperative that new facts be related to this background of experience.

2. The adult must acquire and retain a high degree of self-confidence and must have a feeling of success to a far greater degree than children.

3. Since the adult usually has a ready-made motive or purpose when he comes to school, learning is of greater consequence and more worthwhile to him.

4. One of the primary objectives of the learning situation should be to provide a satisfaction of achievement for the learner.

5. The adult learner has more experience and a different quality of experience to contribute to the learning situation.

6. The adult learner is ready to learn different things than the youthful learner, because he faces different developmental tasks, e.g., parenthood.

E. Adult classes are usually very informal. They may even be a kind of "town hall" discussion session.

F. Examinations are usually not needed.

G. Adults learn a great deal from each other.

H. The adult teacher may be younger than his students.

1. The adult learner tends to be more autonomous, and therefore, less comfortable in a dependent role.

Source: Unknown

III. Essential Facts About Adults in a Learning Situation

A. Research has proved that:

1. The mind does not deteriorate with age

2. Adults are able to do "fast memorizing" more efficiently than young children.

3. Adult learners have an advantage over children because of their experience.

4. Adults learn more efficiently because they have a stronger reason for learning.

B. How adult learning can be improved:

1. He must WANT to learn. What he learns must have practical application.

2. He must squelch his doubts and fears, and he has many of them.

3. He learns best by doing. Problem solving is an excellent device.

4. He is sensitive to failure.

C. Roadblocks to adult learning:

1. Negative feeling about self.
2. Strong resistance to change.

Source: Unknown

ADULT EDUCATION

BASIC SKILLS TASK FORCE:

ARITHMETIC COMPUTATION

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January, 1982

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## ABSTRACT

This booklet has been compiled as a guide and aid for math teachers. Thirty competencies have been identified in this booklet to assist adult and high school students to meet their functional math needs in everyday life. This booklet is designed to meet the criteria of local programs. It is a written set of instructions and a model with step-by-step procedures that assist each teacher in being creative in using the material to fit his desired program. Included is a table of contents, pre-tests, review exercises and post tests for each basic skill for convenience.

## SIGNIFICANCE OF NUMBERS

At the top of each page of this publication, beginning with page number 1, you will find information that will be useful to the teacher in identifying the subject area, level, and sequence of each instructional objective. For example, the following appears at the top of page 1:

| TITLE: Adult Education Basic Arithmetic Computation Skills | TOPIC: Reading Whole Numbers Using Words | 117-001 |
|---|---|---|

The six digit number (117-001) can be interpreted by using the following NUMBER CODE.

### NUMBER CODE

Subject Areas - The 1st digit in the series

0 0 0 - 0 0 0 - Other
1 0 0 - 0 0 0 - Mathematics
2 0 0 - 0 0 0 - Science
3 0 0 - 0 0 0 - Social Studies
4 0 0 - 0 0 0 - Communications
5 0 0 - 0 0 0 - Music/Art
6 0 0 - 0 0 0 - Health/Phys. Ed.
7 0 0 - 0 0 0 - Driver/Safety Ed.
8 0 0 - 0 0 0 - Foreign Language
9 0 0 - 0 0 0 - Vocational Career

Level - The 2nd and 3rd digits in the series

0 1 7 - 0 0 0 - Beginning Level
0 1 8 - 0 0 0 - Intermediate Level
0 1 9 - 0 0 0 - Advanced Level

Sequence of Objectives - The 4th, 5th, and 6th digits in the series

0 0 0 - 0 0 1 to 0 0 0 - 9 9 9

| TITLE: Adult Education Basic Arithmetic Computation Skills | TOPIC: Reading Whole Numbers Using Words | 117-001 |
|---|---|---|

Objective #1: The student will be able to read and write whole numbers using words.

## Pre-Test

### Reading Whole Numbers Using Words

Read the full number:

1. 297
2. $53,862
3. 6,071
4. $907,291
5. $1,209,321
6. 106,706
7. $90,262,392
8. 27,425,692
9. 562,200,908,211
10. A satellite sent a message from 22,000,607 miles in space.

## Answers

1. Two hundred ninety-seven.
2. Fifty-three thousand, eight hundred sixty-two dollars.
3. Six thousand, seventy-one.
4. Nine hundred seven thousand, two hundred ninety-one dollars.
5. One million, two hundred nine thousand, three hundred twenty-one.
6. One hundred six thousand, seven hundred six.
7. Ninety million, two hundred sixty-two thousand, three hundred ninety-two dollars.
8. Twenty-seven million, four hundred twenty-five thousand, six hundred ninety-two.
9. Five hundred sixty-two billion, two hundred million, nine hundred eight thousand, two hundred eleven.
10. Twenty-two million, six hundred seven.

## Review Exercises

### Reading Whole Numbers Using Words

Read the full number:

1. 337
2. 648
3. 921
4. 48,211
5. 76,349
6. 57,769
7. 8,010
8. 70,961
9. 108,972
10. 3,362,182
11. 4,721,111
12. 61,819,999
13. 8,162,301
14. 202,603,110
15. 71,177,719
16. 663,921
17. 821,100
18. 999,999
19. 136,922,666
20. 419,693,427,060
21. George was told that the sun was 1,000,000 light years from the North Star.
22. The average U.S. Senator makes $79,382 per year.
23. Allen reported to the class that there are less than a dozen people in the world that have more than $1,000,000,000.

## Answers

1. Three hundred thirty-seven.
2. Six hundred forty-eight.
3. Nine hundred twenty-one.
4. Forty-eight thousand, two hundred eleven.
5. Seventy-six thousand, three hundred forty-nine.
6. Fifty-seven thousand, seven hundred sixty-nine.
7. Eight thousand, ten.
8. Seventy thousand, nine hundred sixty-one.
9. One hundred eight thousand, nine hundred seventy-two.
10. Three million, three hundred sixty-two thousand, one hundred eight-two.
11. Four million, seven hundred twenty-one thousand, one hundred eleven.
12. Sixty-one million, eight hundred nineteen thousand, nine hundred ninety-nine.
13. Eight million, one hundred sixty-two thousand, three hundred one.
14. Two hundred two million, six hundred three thousand, one hundred ten.
15. Seventy-one million, one hundred seventy-seven thousand, seven hundred nineteen.
16. Six hundred and sixty-three thousand, nine hundred twenty-one.
17. Eight hundred twenty-one thousand, one hundred.
18. Nine hundred ninety-nine thousand, nine hundred ninety-nine.
19. One hundred thirty-six million, nine hundred twenty-two thousand, six hundred sixty-six.
20. Four hundred nineteen billion, six hundred ninety-three million, four hundred twenty-seven thousand, sixty.
21. One million.
22. Seventy-nine thousand, three hundred eighty-two dollars.
23. One billion dollars.

## Post Test

### Reading Whole Numbers Using Words

Read the full number:

1. 627
2. 78
3. 7,061
4. 8,702
5. 26,076
6. 806,607
7. 12,606,906
8. 312,063,911
9. 906,006,112,961
10. President Reagan said that by 1985 the national debt will exceed $1,000,000,000,000.

## Answers

1. Six hundred twenty-seven.
2. Seventy-eight.
3. Seven thousand, sixty-one.
4. Eight thousand, seven hundred two.
5. Twenty-six thousand, seventy-six.
6. Eight hundred six thousand, six hundred seven.
7. Twelve million, six hundred six thousand, nine hundred six.
8. Three hundred twelve million, sixty-three thousand, nine hundred eleven.
9. Nine hundred six billion, six million, one hundred twelve thousand, nine hundred sixty-one.
10. One trillion dollars.

Objective #2: The student will be able to add whole numbers.

## Pre-Test

### Addition of Whole Numbers

Add the following whole numbers:

1. $\begin{array}{r} 9 \\ +\ 8 \end{array}$

2. $\begin{array}{r} 11 \\ +\ 27 \end{array}$

3. $\begin{array}{r} 476 \\ +\ 513 \end{array}$

4. $\begin{array}{r} 38 \\ 32 \\ 75 \\ 81 \\ +\ 64 \end{array}$

5. $\begin{array}{r} 911 \\ +\ 50 \end{array}$

6. $\begin{array}{r} 7612 \\ +\ 3111 \end{array}$

7. $\begin{array}{r} 146{,}587 \\ +\ 351{,}009 \end{array}$

8. $\begin{array}{r} 198 \\ 223 \\ 410 \\ 354 \\ +\ 576 \end{array}$

9. $\begin{array}{r} \$\ 84.92 \\ +\ 13.61 \end{array}$

Practical Application:

10. John's utility bills for the month were: gas, $19.20; electricity, $50.49; sewer, $7.00; Garbage, $6.00; and water, $11.92. What was John's total utility bill?

## Answers

1. 17
2. 38
3. 989
4. 290
5. 961
6. 10,723
7. 497,596
8. 1,761
9. $98.53
10. $94.61

## Review Exercises

### Addition of Whole Numbers

Add the following whole numbers:

| | | | | |
|---|---|---|---|---|
| 1. 7 + 3 | 2. 8 + 4 | 3. 9 + 8 | 4. 36 + 28 | 5. 27 + 34 |
| 6. 46 + 36 | 7. 45 + 39 | 8. 352 + 491 | 9. 427 + 237 | 10. 497 + 231 |
| 11. 256 + 831 | 12. 911 + 82 | 13. 842 + 51 | 14. 521 + 873 | 15. 620 + 456 |
| 16. 753 + 847 | 17. 624 + 57 | 18. 582 + 14 | 19. 621 + 51 | 20. 6,115 + 4,189 |
| 21. 7,184 + 1,002 | 22. 6,981 + 1,764 | 23. 4,588 + 1,752 | 24. 5,280 + 576 | 25. 17,469 + 6,511 |
| 26. 23,908 + 14,246 | 27. 62,846 + 52,018 | 28. 145,586 + 352,006 | 29. 617,800 + 400,010 | |
| 30. 962<br>111<br>289<br>82<br>+ 617 | 31. 667<br>412<br>786<br>511<br>+ 901 | 32. 6,437<br>1,955<br>86<br>6<br>+ 9,206 | 33. 86,506<br>4,512<br>93,801<br>+ 561,896 | 34. $ 92.06 + 91.97 |

Practical Application:

35. Martha counted the money in her supermarket cash register. She had three $100-bills, eight $10-bills, and twenty-three $1-bills. How much money did she have?

36. Father wanted to keep his daily calorie count down to 1,500. After dinner he counted his calories for the day: Breakfast, 503; Lunch, 462; and Dinner, 619. Did he reach his goal?

## Answers

1. 10
2. 12
3. 17
4. 64
5. 61
6. 82
7. 84
8. 843
9. 664
10. 728
11. 1,087
12. 993
13. 893
14. 1,394
15. 1,076
16. 1,600
17. 681
18. 596
19. 672
20. 10,304
21. 8,186
22. 8,745
23. 6,340
24. 5,856
25. 23,980
26. 38,154
27. 114,864
28. 497,592
29. 1,017,810
30. 2,061
31. 3,277
32. 17,690
33. 746,715
34. $184.03
35. $403.00
36. No

## Post Test

### Addition of Whole Numbers

Add the following whole numbers:

1. $\begin{array}{r} 7 \\ +\ 9 \end{array}$

2. $\begin{array}{r} 26 \\ +\ 78 \end{array}$

3. $\begin{array}{r} 880 \\ +\ 315 \end{array}$

4. $\begin{array}{r} 86 \\ 92 \\ 11 \\ 7 \\ +\ 18 \end{array}$

5. $\begin{array}{r} 446 \\ +\ 17 \end{array}$

6. $\begin{array}{r} 8{,}162 \\ +\ 2{,}003 \end{array}$

7. $\begin{array}{r} 561{,}982 \\ +\ 348{,}006 \end{array}$

8. $\begin{array}{r} 782 \\ 601 \\ 970 \\ 111 \\ +\ 92 \end{array}$

9. $\begin{array}{r} \$\ 110.00 \\ +\ 83.11 \end{array}$

Practical Application:

10. At the supermarket Mary spent $9.08 for a roast, $16.19 for steak, $1.89 for hamburger, and $8.80 for pork chops. What was the total amount spent for meat?

## Answers

1. 16
2. 104
3. 1,195
4. 214
5. 463
6. 10,165
7. 909,988
8. 2,556
9. $193.11
10. $35.96

Objective #3: The student will be able to subtract whole numbers.

Pre-Test

Subtraction of Whole Numbers

Subtract the following whole numbers:

1. $\begin{array}{r} 91 \\ -\ 30 \\ \hline \end{array}$

2. $\begin{array}{r} 596 \\ -\ 211 \\ \hline \end{array}$

3. $\begin{array}{r} 4{,}286 \\ -\ 3{,}100 \\ \hline \end{array}$

4. $\begin{array}{r} 7{,}003 \\ -\ \ 98 \\ \hline \end{array}$

5. $\begin{array}{r} 4{,}861 \\ -\ 2{,}133 \\ \hline \end{array}$

6. $\begin{array}{r} \$\ 88.14 \\ -\ 67.28 \\ \hline \end{array}$

7. $\begin{array}{r} \$\ 402.17 \\ -\ 136.29 \\ \hline \end{array}$

8. $\begin{array}{r} 28{,}427 \\ -\ 27{,}989 \\ \hline \end{array}$

9. $\begin{array}{r} 226{,}319 \\ -\ 168{,}746 \\ \hline \end{array}$

Practical Application:

10. The Boeing 727 jet airplane is larger and slower than the Hughes 714. The wingspan of the 727 is 1,650 inches, where the 714 is only 1,497 inches. How much longer is the wingspan of the Boeing 727?

## Answers

1. 61
2. 385
3. 1,186
4. 6,905
5. 2,728
6. $20.86
7. $265.88
8. 438
9. 57,573
10. 153

## Review Exercises

### Subtraction of Whole Numbers

Subtract the following whole numbers:

| | | | | |
|---|---|---|---|---|
| 1. 76 − 24 | 2. 90 − 36 | 3. 596 − 213 | 4. 786 − 693 | 5. 823 − 313 |
| 6. 7,006 − 83 | 7. 9,902 − 314 | 8. 4,000 − 3,921 | 9. 73,035 − 528 | |
| 10. 5,691 − 3,219 | 11. 7,263 − 1,009 | 12. 8,360 − 7,609 | 13. 11,006 − 3,009 | |
| 14. 52,050 − 13,051 | 15. 64,901 − 54,906 | 16. 90,991 − 89,067 | 17. 17,862 − 17,859 | |
| 18. $ 4.60 − 2.11 | 19. $ 9.86 − 7.17 | 20. $ 15.37 − 9.88 | 21. $ 11.63 − 9.81 | |
| 22. $ 47.94 − 14.82 | 23. 26,143 − 25,981 | 24. 86,953 − 21,119 | 25. 19,816 − 14,911 | |
| 26. 226,311 − 199,296 | 27. 666,696 − 569,627 | | | |

Practical Application:

28. Joan was going to buy a new waterbed. The cost was $642.09. A discount of $96.72 was given if the waterbed was purchased before July 1. Joan purchased the bed on May 29. What did she pay?

29. The Golden Gate Bridge is 6,690 feet long. The Brooklyn Bridge is 4,620 feet long. How much longer is the Golden Gate Bridge than the Brooklyn Bridge?

## Answers

1. 52
2. 54
3. 383
4. 93
5. 510
6. 6,923
7. 9,588
8. 79
9. 72,507
10. 2,472
11. 6,254
12. 751
13. 7,997
14. 38,999
15. 9,995
16. 1,924
17. 3
18. $2.49
19. $2.69
20. $5.49
21. $1.82
22. $33.12
23. 162
24. 65,834
25. 4,905
26. 27,015
27. 97,069
28. $545.37
29. 2,070

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## Post-Test

### Subtraction of Whole Numbers

Subtract the following whole numbers:

1. $\begin{array}{r} 67 \\ -\ 30 \\ \hline \end{array}$

2. $\begin{array}{r} 632 \\ -\ 311 \\ \hline \end{array}$

3. $\begin{array}{r} 5{,}697 \\ -\ 4{,}600 \\ \hline \end{array}$

4. $\begin{array}{r} 8{,}005 \\ -\ 87 \\ \hline \end{array}$

5. $\begin{array}{r} 3{,}892 \\ -\ 3{,}112 \\ \hline \end{array}$

6. $\begin{array}{r} \$\ 44.16 \\ -\ 12.29 \\ \hline \end{array}$

7. $\begin{array}{r} \$\ 619.07 \\ -\ 418.29 \\ \hline \end{array}$

8. $\begin{array}{r} 46{,}918 \\ -\ 12{,}999 \\ \hline \end{array}$

9. $\begin{array}{r} 672{,}811 \\ -\ 237{,}936 \\ \hline \end{array}$

Practical Application

10. The Union Pacific run from Salt Lake to Los Angeles is 714 miles long. The Union Pacific run from Salt Lake to Provo is 46 miles. How much further is it to Los Angeles from Provo?

## Answers

1. 37
2. 321
3. 1,097
4. 7,919
5. 780
6. 3,187
7. 20,078
8. 33,919
9. 434,875
10. 668

Objective #4: The student will be able to multiply whole numbers.

Pre-Test

Multiplication of Whole Numbers

Multiply the following whole numbers:

1. 31 x 5

2. 231 x 4

3. 1,061 x 7

4. 92,634 x 69

5. 314 x 71

6. $ 4.27 x 2.01

7. $ 8.21 x .39

8. 3,781 x 403

9. 93,712 x 4,040

Practical Application:

10. Your heart beats about 4,300 times an hour. How many times does it beat in a day? (24 hrs. in one day)

## Answers

1. 155
2. 924
3. 7,427
4. 6,391,746
5. 22,294
6. $8.58
7. $320.19
8. 1,523,743
9. 378,596,480
10. 103,200

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## Review Exercises

### Multiplication of Whole Numbers

Multiply the following whole numbers:

| | | | | |
|---|---|---|---|---|
| 1. 62 x 6 | 2. 89 x 7 | 3. 60 x 4 | 4. 199 x 3 | 5. 816 x 7 |
| 6. 307 x 4 | 7. 7,060 x 9 | 8. 9,308 x 3 | 9. 4,434 x 2 | 10. 2,201 x 6 |
| 11. 6,600 x 7 | 12. 76,301 x 21 | 13. 41,699 x 44 | 14. 55,001 x 67 | 15. 31,664 x 72 |
| 16. 210 x 61 | 17. 314 x 68 | 18. 101 x 24 | 19. $ 5.19 x 6.01 | 20. $ 7.10 x 9.83 |
| 21. $ 3.34 x 4.10 | 22. $ 7.06 x 16 | 23. $ 3.22 x 17 | 24. $ 7.01 x 46 | 25. 8,061 x 406 |
| 26. 1,201 x 806 | 27. 4,906 x 413 | 28. 61,782 x 5,006 | 29. 42,106 x 3,001 | 30. 70,000 x 5,968 |

Practical Application:

31. Diane makes $ .07 per minute. How much does she make an:

    (a) hour
    (b) day (8 hrs. per day)
    (c) week (5 days per week)

32. If Bob drives 55 miles per hour, how many miles can he drive in:

    (a) 4 hours
    (b) 9 hours
    (c) 11 hours

## Answers

1. 372
2. 623
3. 240
4. 597
5. 5,712
6. 1,228
7. 63,540
8. 27,924
9. 8,868
10. 13,206
11. 46,200
12. 1,602,321
13. 1,834,756
14. 3,685,067
15. 2,279,808
16. 12,810
17. 21,352
18. 2,424
19. $31.19
20. $69.79
21. $13.69
22. $112.96
23. $54.74
24. $322.46
25. 3,272,766
26. 968,006
27. 2,026,178
28. 309,280,692
29. 126,360,106
30. 417,760,000
31. (a) $420.00
    (b) $33.60
    (c) $168.00
32. (a) 220
    (b) 495
    (c) 605

## Post-Test

### Multiplication of Whole Numbers

Multiply the following whole numbers:

1. $\begin{array}{r} 72 \\ \times\ 6 \\ \hline \end{array}$

2. $\begin{array}{r} 456 \\ \times\ 4 \\ \hline \end{array}$

3. $\begin{array}{r} 6{,}075 \\ \times\ 8 \\ \hline \end{array}$

4. $\begin{array}{r} 72{,}642 \\ \times\ 67 \\ \hline \end{array}$

5. $\begin{array}{r} 493 \\ \times\ 76 \\ \hline \end{array}$

6. $\begin{array}{r} \$\ 9.22 \\ \times\ 2.06 \\ \hline \end{array}$

7. $\begin{array}{r} \$\ 9.18 \\ \times\ 46 \\ \hline \end{array}$

8. $\begin{array}{r} 5{,}562 \\ \times\ 606 \\ \hline \end{array}$

9. $\begin{array}{r} 63{,}910 \\ \times\ 5{,}050 \\ \hline \end{array}$

Practical Application:

10. Your heart beats about 103,200 times per day. How many times does it beat in a week?

## Answers

1. 432
2. 1,824
3. 48,600
4. 4,867,014
5. 37,468
6. $18.99
7. $422.28
8. 3,370,572
9. 322,745,500
10. 722,400

Objective #5: The student will be able to write numerals in expanded forms using exponents.

## Pre-Test

### Writing Numerals in Expanded Forms Using Exponents

Write standard numerals:

1. 800 + 30 + 6
2. 3,000 + 500 + 70 + 2

Write expanded numerals:

3. 127
4. 1,672
5. 80,279

Tell the value of the underlined digit:

6. 1,026
7. 42,827

Write expanded numerals. Use exponential form.

8. 1,234
9. 9,548

Practical Application:

10. John was told in history class that Columbus set sail from Spain and landed in America in the year 1000 + 400 + 9 + 2. What year was it? (Write in standard numerals)

## Answers

1. 836
2. 3,572
3. 100 + 20 + 7
4. 1,000 + 600 + 70 + 2
5. 80,000 + 200 + 70 + 9
6. Thousands
7. Ten Thousand
8. $(1 \cdot 10^3) + (2 \cdot 10^2) + (3 \cdot 10) + 4$
9. $(9 \cdot 10^3) + (5 \cdot 10^2) + (4 \cdot 10) + 8$
10. 1,492

## Review Exercises

### Writing Numerals in Expanded Forms Using Exponents

Write standard numerals:

1. 70 + 2
2. 700 + 30 + 6
3. 800 + 50 + 3
4. 4,000 + 600 + 90 + 1
5. 6,000 + 500 + 80 + 9
6. 8,000 + 100 + 10 + 0

Write expanded numerals:

7. 192
8. 662
9. 721
10. 2,342
11. 7,924
12. 8,006
13. 20,109
14. 42,001
15. 77,918

Tell the value of the underlined digit:

16. 2,122
17. 7,002
18. 10,621
19. 26,247
20. 174,623
21. 107,621

Write expanded numerals. Use exponential form.

22. 1,234
23. 3,518
24. 7,231
25. 9,548
26. 12,987
27. 75,000
28. 234,957
29. 547,000
30. 725,456

Practical Application:

31. Greg said that his grandfather was born in 1,000 + 800 + 90 + 6. In what year was he born? (write in standard numerals)

32. Archeologists found bones of a man who they believed lived in North Dakota 10,126 years ago. How old are the bones? (write in expanded numerals)

33. The meridian of time was 1,000 + 900 + 80 + 1 years ago. What year is it now? (write in standard numerals)

## Answers

1. 72
2. 736
3. 853
4. 4,691
5. 6,589
6. 8,110
7. 100 + 90 + 2
8. 600 + 60 + 2
9. 700 + 20 + 1
10. 2,000 + 300 + 40 + 2
11. 7,000 + 900 + 20 + 4
12. 8,000 + 0 + 0 + 6
13. 20,000 + 100 + 0 + 9
14. 42,000 + 0 + 0 + 1
15. 77,000 + 900 + 10 + 8
16. Thousands
17. Hundreds
18. Thousands
19. Ten Thousands
20. Hundred Thousands
21. Hundred Thousands
22. $(1 \cdot 10^3) + (2 \cdot 10^2) + (3 \cdot 10) + 4$
23. $(3 \cdot 10^3) + (5 \cdot 10^2) + (1 \cdot 10) + 8$
24. $(7 \cdot 10^3) + (2 \cdot 10^2) + (3 \cdot 10) + 1$
25. $(9 \cdot 10^3) + (5 \cdot 10^2) + (4 \cdot 10) + 8$
26. $(1 \cdot 10^4) + (2 \cdot 10^3) + (9 \cdot 10^2) + (8 \cdot 10) + 7$
27. $(7 \cdot 10^4) + (5 \cdot 10^3) + (0 \cdot 10^2) + (0 \cdot 10) + 0$
28. $(2 \cdot 10^5) + (3 \cdot 10^4) + (4 \cdot 10^3) + (9 \cdot 10^2) + (5 \cdot 10) + 7$
29. $(5 \cdot 10^5) + (4 \cdot 10^4) + (7 \cdot 10^3) + (0 \cdot 10^2) + (0 \cdot 10) + 0$
30. $(7 \cdot 10^5) + (2 \cdot 10^4) + (5 \cdot 10^3) + (4 \cdot 10^2) + (5 \cdot 10) + 6$
31. 1896
32. 10,000 + 100 + 20 + 6
33. 1981

## Post-Test

### Writing Numerals in Expanded Forms Using Exponents

Write standard numerals:

1. $600 + 40 + 1$
2. $800 + 60 + 9$

Write exponent numerals:

3. 433
4. 1,355
5. 42,131

Tell the value of the underlined digit:

6. 2<u>6</u>,210
7. <u>1</u>99,002

Write expanded numerals. Use exponential form.

8. 3,518
9. 7,231

Practical Application:

10. Diane learned in school that the first white settlers arrived in Salt Lake Valley, July 24, $1,000 + 800 + 40 + 7$. (In what year did they arrive? (write in standard numerals)

## Answers

1. 641
2. 869
3. 400 + 30 + 3
4. 1,000 + 300 + 50 + 5
5. 42,000 + 100 + 30 + 1
6. Thousands
7. Hundred Thousands
8. $(3 \cdot 10^3) + (5 \cdot 10^2) + (1 \cdot 10) + 8$
9. $(7 \cdot 10^3) + (2 \cdot 10^2) + (3 \cdot 10) + 1$
10. 1847

Objective #6: The student will be able to divide whole numbers.

## Pre-Test

### Division of Whole Numbers

Divide the following whole numbers:

1. $4\overline{)84}$

2. $8\overline{)968}$

3. $4\overline{)3,392}$

4. $48\overline{)432}$

5. $152\overline{)95,608}$

6. $405\overline{)25,110}$

7. $200\overline{)85,200}$

8. $600\overline{)492,000}$

9. $372\overline{)219,480}$

Practical Application:

10. In 22 basketball games, Larry scores 96 field goals (2 points each) and 39 foul pitches (1 point each). What is his average points per game?

## Answers

1. 21
2. 121
3. 848
4. 9
5. 629
6. 62
7. 426
8. 820
9. 590
10. 10½ or 10.5

## Review Exercises

### Division of Whole Numbers

Write quotient and remainder:

1. 9,680 ÷ 2 =
2. 9,060 ÷ 3 =
3. 553 ÷ 3 =
4. 27,645 ÷ 7 =
5. 98,622 ÷ 4 =
6. 4,657 ÷ 6 =
7. 324 ÷ 12 =
8. 984 ÷ 24 =
9. 3,120 ÷ 48 =
10. 7,344 ÷ 34 =
11. 70,035 ÷ 29 =
12. 138,947 ÷ 71 =
13. 64,603 ÷ 77 =
14. 574,200 ÷ 66 =
15. 651,092 ÷ 78 =
16. 693 ÷ 213 =
17. 1,920 ÷ 640 =
18. 9,690 ÷ 285 =
19. 10,992 ÷ 229 =
20. 10,800 ÷ 144 =
21. 95,608 ÷ 152 =
22. 433,920 ÷ 768 =
23. 49,392 ÷ 504 =
24. 304,500 ÷ 725 =
25. 304,500 ÷ 500 =
26. 290,100 ÷ 100 =
27. 149,520 ÷ 320 =
28. 422,400 ÷ 5,280 =

Practical Application:

29. The total school attendance for Provo High School for the 21 days of school in April was 19,467. What was the average daily attendance?

30. The weights of the seven linemen on the BYU football team starting with the right end are 190, 205, 241, 232, 223, 215, and 185 respectively. The weights of the backfield are 168, 182, 175, and, 179 pounds. What is the average weight per man on the line? In the backfield? Team average?

## Answers

1. 4,840
2. 3,020
3. 184 R 1
4. 3,949 R 2
5. 24,655 R 2
6. 776 R 1
7. 27
8. 41
9. 65
10. 216
11. 2,415
12. 1,957
13. 839
14. 8,700
15. 8,347 R 26
16. 3 R 54
17. 3
18. 34
19. 48
20. 75
21. 629
22. 565
23. 98
24. 420
25. 609
26. 2901
27. 467 R 80
28. 80
29. 927
30. (a) 213
    (b) 176
    (c) 199 R 6 or $\frac{6}{11}$

## Post-Test

### Division of Whole Numbers

Write quotient and remainder:

1. 768) 433,920

2. 229) 10,992

3. 66) 574,200

4. 5,280) 422,400

5. 589) 433,704

6. 700) 408,800

7. 625) 294,625

8. 2,240) 20,160

9. 258) 191,049

Practical Application:

10. In the championship football game four backs of East High School played as follows: Johnson in 9 tries gained 108 yards, Andrews in 13 tries gained 104 yards, Leonard in 4 tries gained 20 yards, and Phillips in 3 tries gained 36 yards. Find each players average gain per try. Find the teams average gain per try.

## Answers

1. 565
2. 48
3. 8,700
4. 80
5. 736 R 200
6. 584
7. 471 R 250
8. 9
9. 740 R 129
10. (a) 12 yds. Johnson
    (b) 8 yds. Andrews
    (c) 5 yds. Leonard
    (d) 12 yds. Phillips
    (e) $9\frac{7}{29}$ or 9.2 yds. Team

Objective #7: The student will understand equivalent fractions and be able to reduce fractions to the lowest terms.

## Pre-Test

### Equivalent Fractions

Solve for the missing number:

1. $\frac{1}{2} = \frac{\quad}{4}$
2. $\frac{5}{8} = \frac{\quad}{16}$
3. $\frac{4}{5} = \frac{\quad}{25}$
4. $\frac{16}{24} = \frac{\quad}{3}$
5. $\frac{8}{8} =$
6. $\frac{11}{12} = \frac{\quad}{24}$

Reduce to the lowest terms:

7. $\frac{24}{36} =$
8. $\frac{12}{84} =$
9. $\frac{40}{100} =$
10. $\frac{18}{24} =$

## Answers

1. 2
2. 10
3. 20
4. 2
5. 1
6. 22
7. $\frac{2}{3}$
8. $\frac{1}{7}$
9. $\frac{2}{5}$
10. $\frac{3}{4}$

## Review Exercises

### Equivalent Fractions

Solve for the missing number:

1. $\frac{5}{7} = \frac{\quad}{21}$
2. $\frac{5}{9} = \frac{\quad}{72}$
3. $\frac{3}{8} = \frac{\quad}{40}$
4. $\frac{17}{32} = \frac{\quad}{64}$
5. $\frac{5}{12} = \frac{\quad}{60}$
6. $\frac{3}{16} = \frac{\quad}{48}$
7. $\frac{5}{6} = \frac{\quad}{12}$
8. $\frac{7}{8} = \frac{\quad}{32}$
9. $\frac{3}{4} = \frac{\quad}{24}$
10. $\frac{2}{3} = \frac{\quad}{12}$
11. $\frac{1}{2} = \frac{\quad}{8}$
12. $\frac{1}{3} = \frac{\quad}{15}$
13. $\frac{1}{5} = \frac{\quad}{20}$
14. $\frac{1}{4} = \frac{\quad}{28}$
15. $\frac{1}{2} = \frac{\quad}{18}$
16. $\frac{1}{8} = \frac{\quad}{48}$
17. $\frac{1}{12} = \frac{\quad}{72}$
18. $\frac{1}{6} = \frac{\quad}{42}$
19. $\frac{1}{16} = \frac{\quad}{64}$
20. $\frac{1}{10} = \frac{\quad}{70}$
21. $\frac{21}{25} = \frac{\quad}{100}$
22. $\frac{3}{8} = \frac{\quad}{100}$
23. $\frac{2}{3} = \frac{\quad}{100}$
24. $\frac{17}{50} = \frac{\quad}{100}$
25. $\frac{43}{50} = \frac{\quad}{100}$
26. $\frac{2}{25} = \frac{\quad}{100}$
27. $\frac{9}{20} = \frac{\quad}{100}$
28. $\frac{2}{5} = \frac{\quad}{100}$
29. $\frac{3}{4} = \frac{\quad}{100}$
30. $\frac{7}{10} = \frac{\quad}{100}$

Change:

31. $\frac{3}{5}$ to 20ths
32. $\frac{2}{3}$ to 18ths
33. $\frac{9}{10}$ to 40ths
34. $\frac{3}{8}$ to 32nds
35. $\frac{1}{6}$ to 48ths
36. $\frac{11}{12}$ to 24ths
37. $\frac{3}{4}$ to 64ths
38. $\frac{15}{16}$ to 32nds
39. $\frac{10}{12}$ to 48ths
40. $\frac{4}{10}$ to 100ths

## Answers

1. 15
2. 40
3. 15
4. 34
5. 25
6. 9
7. 10
8. 28
9. 18
10. 8
11. 4
12. 5
13. 4
14. 7
15. 9
16. 6
17. 6
18. 7
19. 4
20. 7
21. 84
22. $37\frac{1}{2}$
23. $66\frac{2}{3}$
24. 34
25. 86
26. 8
27. 45
28. 40
29. 75
30. 70
31. 12
32. 12
33. 36
34. 12
35. 8
36. 22
37. 48
38. 30
39. 40
40. 40

## Post-Test

### Equivalent Fractions

Fill in the missing number:

1. $\frac{2}{3} = \frac{\quad}{12}$

2. $\frac{17}{34} = \frac{\quad}{68}$

3. $\frac{43}{50} = \frac{\quad}{100}$

4. $\frac{11}{16} = \frac{55}{\quad}$

5. $\frac{9}{32} = \frac{27}{\quad}$

6. $\frac{13}{16} = \frac{26}{\quad}$

7. $\frac{9}{20} = \frac{\quad}{100}$

8. $\frac{7}{\quad} = \frac{21}{36}$

9. $\frac{2}{3} = \frac{\quad}{100}$

Reduce to lowest terms:

10. (a) $\frac{32}{64} =$

(b) $\frac{18}{24} =$

(c) $\frac{4}{10} =$

(d) $\frac{9}{12} =$

(e) $\frac{16}{24} =$

(f) $\frac{10}{12} =$

## Answers

1. 8
2. 34
3. 86
4. 80
5. 96
6. 32
7. 45
8. 12
9. $66\frac{2}{3}$
10. (a) $\frac{1}{2}$

    (b) $\frac{3}{4}$

    (c) $\frac{2}{5}$

    (d) $\frac{3}{4}$

    (e) $\frac{2}{3}$

    (f) $\frac{5}{6}$

Objective #8: The student will be able to change mixed numbers to fractions and improper fractions to mixed numbers.

Pre-Test

Changing Mixed Numbers to Fractions and Improper Fractions to Mixed Numbers

Change to improper fractions:

1. $1\frac{1}{16} =$ 2. $1\frac{9}{32} =$ 3. $13\frac{3}{5} =$

4. $7\frac{4}{5} =$ 5. $3\frac{5}{6} =$

Change mixed numbers to improper fractions:

6. $\frac{35}{8} =$ 7. $\frac{141}{32} =$ 8. $\frac{15}{4} =$

9. $\frac{14}{3} =$

Practical Application:

10. A bag contains 43 1/2 pounds of sugar. How many 1/4 pound bags can be filled.

## Answers

1. $\frac{17}{16}$

2. $\frac{41}{32}$

3. $\frac{68}{5}$

4. $\frac{39}{5}$

5. $\frac{23}{6}$

6. $4\ \frac{3}{8}$

7. $4\ \frac{13}{32}$

8. $3\ \frac{3}{4}$

9. $4\ \frac{2}{3}$

10. 174

## Review Exercises

### Changing Mixed Numbers to Fractions and Improper Fractions to Mixed Numbers

Change the following mixed numbers to improper fractions:

1. $3\frac{5}{6} =$
2. $8\frac{7}{10} =$
3. $4\frac{3}{8} =$
4. $10\frac{9}{16} =$
5. $13\frac{3}{5} =$
6. $7\frac{4}{5} =$
7. $6\frac{2}{9} =$
8. $5\frac{4}{7} =$
9. $4\frac{13}{32} =$
10. $2\frac{11}{12} =$
11. $1\frac{1}{16} =$
12. $1\frac{9}{32} =$
13. $1\frac{13}{16} =$
14. $5\frac{3}{16} =$
15. $3\frac{7}{12} =$
16. $2\frac{5}{8} =$
17. $3\frac{3}{4} =$
18. $4\frac{2}{3} =$
19. $9\frac{1}{6} =$
20. $3\frac{1}{7} =$

Change the following improper fractions to mixed numbers:

21. $\frac{35}{12} =$
22. $\frac{23}{6} =$
23. $\frac{87}{10}$
24. $\frac{68}{5} =$
25. $\frac{39}{5} =$
26. $\frac{21}{8} =$
27. $\frac{22}{7} =$

Practical Application:

28. How many pieces of wood can be cut from a board 10 1/3 ft. long if each one needs to be 1/3 ft. long?
29. How many pieces 1/4 inches long can be cut from a strip of metal 12 3/4 inches long?
30. How many quarters of an inch in 7 1/4 inches?

## Answers

1. $\frac{23}{6}$
2. $\frac{87}{10}$
3. $\frac{35}{8}$
4. $\frac{169}{16}$
5. $\frac{68}{5}$
6. $\frac{39}{5}$
7. $\frac{56}{9}$
8. $\frac{39}{7}$
9. $\frac{141}{32}$
10. $\frac{35}{12}$
11. $\frac{17}{16}$
12. $\frac{41}{32}$
13. $\frac{29}{16}$
14. $\frac{83}{16}$
15. $\frac{43}{12}$
16. $\frac{21}{8}$
17. $\frac{15}{4}$
18. $\frac{14}{3}$
19. $\frac{55}{6}$
20. $\frac{22}{7}$
21. $2\frac{11}{12}$
22. $3\frac{5}{6}$
23. $8\frac{7}{10}$
24. $13\frac{3}{5}$
25. $7\frac{4}{5}$
26. $2\frac{5}{8}$
27. $3\frac{1}{7}$
28. 31
29. 51
30. 29

## Post-Test

### Changing Mixed Numbers to Fractions and Improper Fractions to Mixed Numbers

Change to improper fractions:

1. $8\frac{7}{8} =$
2. $9\frac{3}{5} =$
3. $11\frac{2}{5}$
4. $6\frac{7}{8} =$
5. $10\frac{3}{4} =$

Change to mixed or whole numbers:

6. $\frac{39}{5} =$
7. $\frac{55}{6} =$
8. $\frac{41}{5} =$
9. $\frac{89}{9} =$

Practical Application:

10. If it takes 1/8 yard of material to make a certain type hat, how many hats can be made from a bolt of material containing 27 3/8 yards?

## Answers

1. $\frac{71}{8}$

2. $\frac{48}{5}$

3. $\frac{57}{5}$

4. $\frac{55}{8}$

5. $\frac{43}{4}$

6. $7\frac{4}{5}$

7. $9\frac{1}{6}$

8. $8\frac{1}{5}$

9. $9\frac{8}{9}$

10. 219

Objective #9: The student will be able to multiply fractions with a reasonable amount of accuracy.

Pre-Test

Multiplication of Fractions

Multiply as indicated:

1. $\frac{7}{8} \times \frac{3}{5} =$
2. $\frac{2}{3} \times 5 =$
3. $\frac{3}{4} \times \frac{8}{15} =$
4. $\frac{13}{16} \times 3 =$
5. $\frac{3}{5} \times 9 =$
6. $2\frac{5}{8} \times 1\frac{1}{4} =$
7. $1\frac{4}{5} \times \frac{2}{3} \times 3\frac{1}{8} =$
8. $5 \times \frac{3}{16} =$
9. $\frac{5}{16} \times 9\frac{3}{5} =$

Practical Application:

10. How many feet of lumber are you going to need to make 12 shelves each 7 1/2 feet long?

## Review Exercises

### Multiplication of Fractions

Multiply as indicated:

1. $15 \times 1\frac{7}{10} =$
2. $8 \times 2\frac{9}{16} =$
3. $18 \times 5\frac{5}{8} =$
4. $4 \times 3\frac{1}{6} =$
5. $16 \times 4\frac{7}{12} =$
6. $3\frac{1}{3} \times \frac{3}{5} =$
7. $2\frac{1}{5} \times \frac{5}{6} =$
8. $6\frac{3}{4} \times \frac{2}{3} =$
9. $3\frac{1}{8} \times \frac{8}{15} =$
10. $4\frac{1}{2} \times \frac{2}{9} =$
11. $\frac{1}{2} \times 3\frac{1}{5} =$
12. $\frac{5}{6} \times 2\frac{3}{10} =$
13. $\frac{7}{8} \times 3\frac{1}{7} =$
14. $\frac{9}{16} \times 1\frac{1}{3} =$
15. $\frac{5}{12} \times 2\frac{1}{4} =$
16. $1\frac{1}{4} \times 1\frac{3}{5} =$
17. $5\frac{1}{3} \times 4\frac{1}{2} =$
18. $2\frac{5}{8} \times 1\frac{5}{7} =$
19. $3\frac{3}{4} \times 1\frac{1}{5} =$
20. $2\frac{2}{3} \times 3\frac{3}{8} =$
21. $2\frac{1}{3} \times 1\frac{1}{5} =$
22. $2\frac{1}{6} \times 2\frac{2}{3} =$
23. $2\frac{2}{5} \times 1\frac{3}{16} =$
24. $1\frac{7}{16} \times 1\frac{5}{9} =$
25. $1\frac{3}{4} \times 3\frac{1}{3} =$
26. $2\frac{1}{8} \times 1\frac{1}{2} =$
27. $3\frac{3}{4} \times 2\frac{7}{8} =$
28. $1\frac{9}{16} \times 4\frac{1}{3} =$
29. $2\frac{5}{6} \times 1\frac{3}{8} =$
30. $4\frac{1}{8} \times 3\frac{13}{16} =$
31. $\frac{1}{4} \times \frac{5}{6} \times \frac{2}{5} =$
32. $\frac{2}{3} \times \frac{5}{8} \times \frac{3}{10} =$
33. $\frac{5}{12} \times \frac{3}{16} \times \frac{4}{5} =$
34. $\frac{2}{5} \times \frac{3}{4} \times \frac{15}{16} =$
35. $\frac{3}{4} \times \frac{3}{5} \times \frac{1}{2} =$
36. $2\frac{3}{4} \times 1\frac{1}{8} \times 3\frac{5}{6} =$
37. $1\frac{1}{2} \times \frac{4}{5} \times 2\frac{1}{6} =$
38. $3\frac{1}{5} \times 1\frac{1}{4} \times 1\frac{1}{3} =$
39. $1\frac{5}{16} \times 2\frac{2}{3} \times 3\frac{1}{7} =$
40. $4\frac{1}{6} \times 3\frac{1}{5} \times 1\frac{3}{10} =$

Practical Application:

41. How much will a trip over a distance of 15 miles cost at 22 1/2 cents per mile?
42. Mr. Johnson earns $5.00 per hour. If he gets time and a half for overtime, what is his hourly rate for overtime work?

## Answers

1. $25\frac{1}{2}$
2. $20\frac{1}{2}$
3. $101\frac{1}{4}$
4. $12\frac{2}{3}$
5. $73\frac{1}{3}$
6. 2
7. $1\frac{5}{6}$
8. $4\frac{1}{2}$
9. $1\frac{2}{3}$
10. 1
11. $1\frac{3}{5}$
12. $1\frac{11}{12}$
13. $2\frac{3}{4}$
14. $\frac{3}{4}$
15. $\frac{15}{16}$
16. 2
17. 24
18. $4\frac{1}{2}$
19. $4\frac{1}{2}$
20. 9
21. $2\frac{4}{5}$
22. $5\frac{7}{9}$
23. $2\frac{17}{20}$
24. $2\frac{17}{72}$
25. $5\frac{5}{6}$
26. $3\frac{3}{16}$
27. $10\frac{25}{32}$
28. $6\frac{37}{48}$
29. $3\frac{43}{48}$
30. $15\frac{93}{128}$
31. $\frac{1}{12}$
32. $\frac{1}{8}$
33. $\frac{1}{16}$
34. $\frac{9}{32}$
35. $\frac{9}{40}$
36. $11\frac{55}{64}$
37. $2\frac{3}{5}$
38. $5\frac{1}{3}$
39. 11
40. $17\frac{1}{3}$
41. $\$3.37\frac{1}{2}$
42. $7.50 per hour

## Post-Test

### Multiplication of Fractions

Multiply as indicated:

1. $\frac{5}{6} \times 2\frac{3}{10} =$

2. $2\frac{5}{8} \times 1\frac{5}{7} =$

3. $1\frac{7}{16} \times 1\frac{5}{9} =$

4. $4\frac{1}{8} \times 3\frac{13}{16} =$

5. $16 \times 4\frac{7}{12} =$

6. $\frac{2}{5} \times \frac{3}{4} \times \frac{15}{16} =$

7. $2\frac{3}{4} \times 1\frac{1}{8} \times 3\frac{5}{6} =$

8. $3\frac{1}{5} \times 1\frac{1}{4} \times 1\frac{1}{3} =$

9. $4\frac{1}{6} \times 3\frac{1}{5} \times 1\frac{3}{10} =$

Practical Application:

10. Jim wants to buy a tape recorder priced at $60.00. He pays 1/5 in cash and the rest in 6 equal monthly payments. How much must he pay each month?

## Answers

1. $1\frac{11}{12}$

2. $4\frac{1}{2}$

3. $2\frac{17}{72}$

4. $15\frac{93}{128}$

5. $73\frac{1}{3}$

6. $\frac{9}{32}$

7. $11\frac{55}{64}$

8. $5\frac{1}{3}$

9. $17\frac{1}{3}$

10. $8.00

Objective #10: The student will be able to divide fractions and mixed numbers.

Pre-Test

Division of Fractions

Divide as indicated:

1. $\frac{3}{5} \div \frac{9}{10} =$

2. $\frac{3}{4} \div 6 =$

3. $1\frac{1}{6} \div 9\frac{1}{3} =$

4. $4\frac{2}{3} \div 2 =$

5. $5 \div \frac{15}{16} =$

6. $2\frac{1}{2} \div \frac{5}{6} =$

7. $9\frac{1}{3} \div 3\frac{1}{7} =$

8. $11\frac{1}{3} \div 2\frac{5}{6} =$

9. $1\frac{7}{16} \div \frac{2}{3} =$

Practical Application::

10. A bus is scheduled to go a distance of 87 1/2 miles in 2 1/2 hours. What average speed must be maintained to arrive on schedule?

## Answers

1. $\frac{2}{3}$

2. $\frac{1}{8}$

3. $\frac{1}{8}$

4. $2\frac{1}{3}$

5. $5\frac{1}{3}$

6. 3

7. $2\frac{32}{33}$

8. 4

9. $2\frac{5}{32}$

10. 35 miles per hour

## Review Exercises

### Division of Fractions

Divide as indicated:

1. $\frac{1}{4} \div \frac{1}{3} =$
2. $\frac{3}{4} \div \frac{4}{5} =$
3. $\frac{1}{2} \div \frac{2}{3} =$
4. $\frac{2}{5} \div \frac{9}{16} =$
5. $\frac{3}{5} \div \frac{11}{12} =$
6. $\frac{3}{5} \div 8 =$
7. $\frac{1}{2} \div 10 =$
8. $\frac{7}{16} \div 3 =$
9. $\frac{11}{12} \div 5 =$
10. $\frac{5}{8} \div 4 =$
11. $18 \div \frac{9}{10} =$
12. $6 \div \frac{4}{5} =$
13. $10 \div \frac{2}{3} =$
14. $12 \div \frac{15}{16} =$
15. $1\frac{1}{2} \div 3 =$
16. $4\frac{2}{3} \div 14 =$
17. $5\frac{3}{5} \div 7 =$
18. $2\frac{7}{16} \div 13 =$
19. $3\frac{3}{8} \div 9 =$
20. $15 \div \frac{21}{32} =$
21. $1\frac{1}{2} \div \frac{9}{16} =$
22. $1\frac{1}{8} \div \frac{3}{32} =$
23. $8\frac{3}{4} \div \frac{7}{8} =$
24. $1\frac{7}{8} \div \frac{3}{16} =$
25. $9\frac{1}{3} \div \frac{7}{24} =$
26. $14\frac{3}{8} \div 2\frac{7}{8} =$
27. $7\frac{1}{2} \div 1\frac{1}{4} =$
28. $14\frac{1}{2} \div 3\frac{5}{8} =$
29. $18\frac{1}{3} \div 1\frac{5}{6} =$
30. $50\frac{1}{4} \div 4\frac{3}{16} =$
31. $2\frac{1}{4} \div 3\frac{3}{8} =$
32. $1\frac{3}{5} \div 3\frac{1}{5} =$
33. $1\frac{13}{16} \div 2\frac{1}{4} =$
34. $2\frac{1}{12} \div 3\frac{3}{4} =$
35. $1\frac{17}{32} \div 2\frac{5}{8} =$
36. $4\frac{1}{2} \div \frac{3}{5} =$
37. $(6\frac{2}{3} \div 3\frac{1}{5}) \div 3\frac{3}{4} =$
38. $\frac{9}{10} \div (\frac{3}{5} \div \frac{3}{4}) =$

Practical Application:

39. If a board 10 1/4 ft. long was cut into 6 pieces of equal length, what would the length of each piece be? Disregard waste.

40. If an airplane flies 560 miles in 1 3/4 hours, what is its average ground speed per hour?

## Answers

1. $\frac{3}{4}$
2. $\frac{15}{16}$
3. $\frac{3}{4}$
4. $\frac{32}{45}$
5. $\frac{36}{55}$
6. $\frac{3}{40}$
7. $\frac{1}{20}$
8. $\frac{7}{48}$
9. $\frac{11}{60}$
10. $\frac{5}{32}$
11. 20
12. $7\frac{1}{2}$
13. 15
14. $12\frac{4}{5}$
15. $\frac{1}{2}$
16. $\frac{1}{3}$
17. $\frac{4}{5}$
18. $\frac{3}{16}$
19. $\frac{3}{8}$
20. $22\frac{6}{7}$
21. $2\frac{2}{3}$
22. 12
23. 10
24. 10
25. 32
26. 5
27. 6
28. 4
29. 10
30. 12
31. $\frac{2}{3}$
32. $\frac{1}{2}$
33. $\frac{29}{36}$
34. $\frac{5}{9}$
35. $\frac{7}{12}$
36. $7\frac{1}{2}$
37. $\frac{5}{9}$
38. $1\frac{1}{8}$
39. $1\frac{17}{24}$ ft.
40. 320 miles per hour

## Post-Test

### Division of Fractions

Divide as indicated:

1. $\frac{7}{16} \div 3 =$

2. $18 \div \frac{9}{10} =$

3. $3\frac{3}{8} \div 9 =$

4. $1\frac{7}{8} \div \frac{3}{16} =$

5. $14\frac{3}{8} \div 2\frac{7}{8} =$

6. $14\frac{1}{2} \div 3\frac{5}{8} =$

7. $50\frac{1}{4} \div 4\frac{3}{16} =$

8. $1\frac{13}{16} \div 2\frac{1}{4} =$

9. $4\frac{1}{2} \div \frac{3}{5} =$

Practical Application:

10. How much does a pound of each of the following items cost if:

    (a) 2 1/2 pounds of beans cost 70¢?

    (b) 1 3/4 pounds of apples cost 98¢?

    (c) 2 5/8 pounds of oranges cost 84¢?

## Answers

1. $\frac{7}{48}$

2. 20

3. $\frac{3}{8}$

4. 10

5. 5

6. 4

7. 12

8. $\frac{29}{36}$

9. $7\frac{1}{2}$

10. (a) 28¢
    (b) 56¢
    (c) 32¢

Objective #11: The student will be able to add fractions.

Pre-Test

Adding Fractions

Add the following fractions:

1. $\frac{1}{3}$ + $\frac{2}{3}$ + $\frac{1}{3}$

2. $\frac{2}{5}$ + $\frac{3}{4}$

3. $2\frac{1}{7}$ + $3\frac{1}{2}$ + $4\frac{1}{3}$

4. $\frac{1}{3}$ + $\frac{1}{5}$ + $\frac{1}{4}$

5. $2\frac{3}{8}$ + $5\frac{1}{4}$

6. $\frac{4}{11}$ + $\frac{3}{12}$

7. $2\frac{1}{5}$ + $4\frac{3}{5}$

8. $3\frac{1}{3}$ + $2\frac{1}{9}$

9. $11\frac{3}{12}$ + $4\frac{5}{9}$

Practical Application:

10. Joan has 3/4 of a cup of margarine. Her neighbor has 1/3 of a cup of margarine. Do they have enough for 1 cup of margarine?

## Answers

1. $1\frac{1}{3}$

2. $1\frac{3}{20}$

3. $9\frac{41}{42}$

4. $\frac{47}{60}$

5. $7\frac{5}{8}$

6. $\frac{81}{132}$

7. $6\frac{4}{5}$

8. $5\frac{4}{9}$

9. $15\frac{29}{36}$

10. Yes

## Review Exercises

### Adding Fractions

Add the following fractions:

1. $\begin{array}{r} \frac{1}{3} \\ +\ \frac{2}{3} \\ \hline \end{array}$

2. $\begin{array}{r} \frac{1}{4} \\ \frac{2}{4} \\ +\ \frac{3}{4} \\ \hline \end{array}$

3. $\begin{array}{r} 2\ \frac{1}{2} \\ +\ 4\ \frac{1}{2} \\ \hline \end{array}$

4. $\begin{array}{r} \frac{5}{8} \\ +\ \frac{7}{8} \\ \hline \end{array}$

5. $\begin{array}{r} \frac{3}{5} \\ +\ \frac{2}{10} \\ \hline \end{array}$

6. $\begin{array}{r} 3\ \frac{1}{4} \\ +\ 2\ \frac{1}{3} \\ \hline \end{array}$

7. $\begin{array}{r} 4\ \frac{2}{9} \\ +\ 3\ \frac{1}{3} \\ \hline \end{array}$

8. $\begin{array}{r} \frac{2}{3} \\ \frac{3}{4} \\ +\ \frac{1}{5} \\ \hline \end{array}$

9. $\begin{array}{r} 223\ \frac{3}{4} \\ +\ 17\ \frac{11}{24} \\ \hline \end{array}$

10. $\begin{array}{r} 14\ \frac{2}{14} \\ +\ 15\ \frac{5}{14} \\ \hline \end{array}$

11. $\begin{array}{r} \frac{3}{4} \\ +\ \frac{2}{3} \\ \hline \end{array}$

12. $\begin{array}{r} 6\ \frac{1}{8} \\ +\ 1\ \frac{1}{6} \\ \hline \end{array}$

Practical Application:

13. John's living room measures 12 1/2' by 17 3/8'. How many feet of molding does he need to go around his room?

14. Emily had to turn in her total number of hours for the week. She worked 2 1/2, 3 3/4, 6, 5 1/4, and 7 3/4. How many hours did she turn in?

## Answers

1. 1
2. $1\frac{1}{2}$
3. 7
4. $1\frac{1}{2}$
5. $\frac{4}{5}$
6. $5\frac{7}{12}$
7. $7\frac{5}{9}$
8. $1\frac{37}{60}$
9. $241\frac{5}{24}$
10. $29\frac{1}{2}$
11. $1\frac{5}{12}$
12. $7\frac{7}{24}$
13. $59\frac{3}{4}$
14. $25\frac{1}{4}$

## Post-Test

### Adding Fractions

Add the following fractions:

1. $\begin{array}{r} \frac{3}{8} \\ \frac{1}{8} \\ +\ \frac{5}{8} \\ \hline \end{array}$

2. $\begin{array}{r} \frac{7}{9} \\ +\ \frac{3}{18} \\ \hline \end{array}$

3. $\begin{array}{r} \frac{2}{3} \\ \frac{1}{4} \\ +\ \frac{1}{5} \\ \hline \end{array}$

4. $\begin{array}{r} 2\ \frac{1}{3} \\ 3\ \frac{2}{5} \\ +\ 4\ \frac{4}{5} \\ \hline \end{array}$

5. $\begin{array}{r} 2\ \frac{1}{2} \\ +\ 4\ \frac{7}{9} \\ \hline \end{array}$

6. $\begin{array}{r} 3\ \frac{2}{3} \\ 7\ \frac{3}{15} \\ +\ 4\ \frac{2}{5} \\ \hline \end{array}$

7. $\begin{array}{r} 2\ \frac{1}{4} \\ 11\ \frac{3}{8} \\ +\ 17\ \frac{2}{24} \\ \hline \end{array}$

8. $\begin{array}{r} 12\ \frac{1}{20} \\ 13\ \frac{3}{10} \\ +\ 2\ \frac{1}{3} \\ \hline \end{array}$

9. $\begin{array}{r} 5\ \frac{2}{9} \\ 7\ \frac{4}{9} \\ +\ 8\ \frac{1}{3} \\ \hline \end{array}$

Practical Application:

10. Barry had to buy 11 7/8', 14 3/4', 11 1/2', and 14 3/4' of molding for his kitchen. How many feet does he need to buy?

## Answers

1. $1\frac{1}{8}$

2. $\frac{17}{18}$

3. $1\frac{7}{60}$

4. $10\frac{8}{15}$

5. $7\frac{5}{18}$

6. $15\frac{4}{15}$

7. $30\frac{17}{24}$

8. $27\frac{41}{60}$

9. 21

10. $52\frac{7'}{8}$

Objective #12: The student will be able to subtract fractions.

Pre-Test

Subtracting Fractions

Subtract the following fractions:

1. $\begin{array}{r} \frac{3}{4} \\ -\frac{1}{4} \\ \hline \end{array}$

2. $\begin{array}{r} 2\frac{5}{8} \\ -1\frac{2}{8} \\ \hline \end{array}$

3. $\begin{array}{r} \frac{5}{9} \\ -\frac{2}{18} \\ \hline \end{array}$

4. $\begin{array}{r} \frac{1}{3} \\ -\frac{1}{4} \\ \hline \end{array}$

5. $\begin{array}{r} 7\frac{3}{4} \\ -4\frac{5}{8} \\ \hline \end{array}$

6. $\begin{array}{r} 13\frac{1}{8} \\ -6 \\ \hline \end{array}$

7. $\begin{array}{r} 9\frac{2}{4} \\ -7\frac{3}{4} \\ \hline \end{array}$

8. $\begin{array}{r} 12 \\ -4\frac{3}{7} \\ \hline \end{array}$

9. $\begin{array}{r} 3\frac{1}{3} \\ -1\frac{6}{7} \\ \hline \end{array}$

Practical Application:

10. Pedro cut 6 3/4 feet off a 8 foot two by four. How many feet did he have left?

## Answers

1. $\frac{1}{2}$

2. $1\frac{3}{8}$

3. $\frac{4}{9}$

4. $\frac{1}{12}$

5. $3\frac{1}{8}$

6. $7\frac{1}{8}$

7. $1\frac{3}{4}$

8. $7\frac{4}{7}$

9. $1\frac{10}{21}$

10. $1\frac{1}{4}$ feet

## Review Exercises

### Subtracting Fractions

Subtract the following fractions:

1. $\frac{3}{4} - \frac{1}{4}$

2. $\frac{7}{16} - \frac{2}{16}$

3. $7\frac{1}{9} - 2\frac{2}{18}$

4. $\frac{2}{3} - \frac{1}{6}$

5. $17\frac{1}{2} - 2\frac{1}{2}$

6. $2\frac{1}{4} - 1\frac{1}{3}$

7. $6\frac{1}{8} - 1\frac{1}{6}$

8. $\frac{9}{17} - \frac{6}{17}$

9. $3\frac{1}{3} - 1\frac{3}{4}$

10. $17 - \frac{3}{8}$

11. $14\frac{11}{12} - 13$

12. $12\frac{1}{5} - 3\frac{3}{4}$

Practical Application:

13. Pam needs 22 credits to graduate from high school. She has 17 3/4. How many more does she need?

14. Bob needs to cut a window 3/8 inches smaller than its actual width of 21 inches. How big does he need to cut it?

## Answers

1. $\frac{1}{2}$
2. $\frac{5}{16}$
3. 5
4. $\frac{1}{2}$
5. 15
6. $\frac{11}{12}$
7. $4\ \frac{23}{24}$
8. $\frac{3}{17}$
9. $1\ \frac{7}{12}$
10. $16\ \frac{5}{8}$
11. $1\ \frac{11}{12}$
12. $8\ \frac{9}{20}$
13. $4\ \frac{1}{4}$
14. $20\ \frac{5}{8}$

## Post-Test

### Subtracting Fractions

Subtract the following fractions:

1. $\frac{7}{8} - \frac{2}{8}$

2. $\frac{4}{9} - \frac{3}{18}$

3. $\frac{1}{2} - \frac{1}{4}$

4. $3\frac{1}{5} - 2\frac{3}{10}$

5. $7\frac{1}{4} - 2\frac{1}{5}$

6. $223\frac{3}{7} - 119\frac{7}{14}$

7. $31\frac{9}{5} - 24\frac{3}{4}$

8. $17\frac{2}{3} - 2\frac{1}{5}$

9. $\frac{14}{3} - \frac{3}{6}$

Practical Application:

10. John has to take 1/8 of an inch off the actual measurements for his window which was 24 1/2" by 17 1/4". How big of a window did he have to buy?

## Answers

1. $\frac{5}{8}$

2. $\frac{5}{18}$

3. $\frac{1}{4}$

4. $\frac{9}{10}$

5. $5\ \frac{1}{20}$

6. $103\ \frac{13}{14}$

7. $7\ \frac{21}{20}$ or $8\ \frac{1}{20}$

8. $15\ \frac{7}{15}$

9. $4\ \frac{1}{6}$

10. $24\ \frac{3}{8}$ by $17\ \frac{1}{8}$

Objective #13: The student will be able to compare fractional values.

Pre-Test

Comparing Fractional Values

Circle the largest in value:

1. $\frac{3}{4}$, $\frac{2}{4}$

2. $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$

3. $\frac{1}{5}$, $\frac{4}{5}$, $\frac{2}{3}$

Circle the lowest in value:

4. $\frac{1}{10}$, $\frac{1}{20}$, $\frac{1}{30}$

5. $\frac{1}{8}$, $\frac{1}{9}$, $\frac{2}{10}$

6. $\frac{1}{99}$, $\frac{111}{999}$, $\frac{1111}{1000}$

Put the following fractions in order starting from the lowest going to the highest:

7. $\frac{1}{2}$, $\frac{4}{5}$, $\frac{3}{10}$

8. $\frac{1}{2}$, $\frac{2}{3}$, $\frac{3}{4}$, $\frac{3}{5}$

9. $\frac{1}{10}$, $\frac{2}{100}$, $\frac{300}{1000}$

Practical Application:

10. Emily wanted to buy a $20.00 camera at the lowest price. Skaggs had the camera for 1/3 off. Grand Central had the same camera for 1/4 off. Which one is cheaper?

## Answers

1. $\frac{3}{4}$

2. $\frac{1}{2}$

3. $\frac{4}{5}$

4. $\frac{1}{30}$

5. $\frac{1}{9}$

6. $\frac{1}{99}$

7. $\frac{3}{10}, \frac{1}{2}, \frac{4}{5}$

8. $\frac{1}{2}, \frac{3}{5}, \frac{2}{3}, \frac{3}{4}$

9. $\frac{2}{100}, \frac{1}{10}, \frac{300}{1000}$

10. Skaggs

## Review Exercises

### Comparing Fractional Values

Circle the largest in value:

1. $\frac{1}{2}$, $\frac{2}{3}$

2. $\frac{3}{5}$, $\frac{2}{3}$

3. $\frac{1}{10}$, $\frac{2}{100}$

4. $\frac{7}{8}$, $\frac{8}{7}$, $\frac{9}{8}$

5. $1\frac{1}{2}$, $1\frac{2}{4}$, $\frac{7}{4}$

6. $\frac{3}{4}$, $\frac{4}{3}$, $\frac{3}{7}$

7. $16\frac{2}{3}$, $15\frac{3}{2}$

Circle the lowest in value:

8. $\frac{3}{4}$, $\frac{5}{8}$

9. $\frac{1}{3}$, $\frac{1}{2}$

10. $3\frac{1}{4}$, $4\frac{1}{3}$

11. $\frac{9}{8}$, $\frac{8}{9}$

Put the following fractions in order starting from the lowest to the highest:

12. $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$

13. $\frac{2}{3}$, $\frac{4}{5}$, $\frac{3}{4}$

14. $1\frac{3}{4}$, $\frac{10}{8}$, $1\frac{1}{8}$

15. $\frac{3}{10}$, $\frac{2}{100}$, $\frac{10}{1000}$

16. $2\frac{1}{2}$, $3\frac{1}{4}$, $\frac{9}{8}$

17. $\frac{5}{6}$, $\frac{7}{12}$, $\frac{3}{24}$

Practical Application:

18. Alex was going for a hike and wanted to know which trail was shorter. The one to Lake Mary was 3 3/4 miles and the one to Dog Lake was 3 2/3 miles. Which one did he take?

19. Willie and Les wanted to know who shot the best from the foul line in basketball. Willie made 45 out of 50 and Les made 17 out of 20. Who shot the best?

## Answers

1. $\frac{2}{3}$
2. $\frac{2}{3}$
3. $\frac{1}{10}$
4. $\frac{8}{7}$
5. $\frac{7}{4}$
6. $\frac{4}{3}$
7. $16\ \frac{2}{3}$
8. $\frac{5}{8}$
9. $\frac{1}{3}$
10. $3\ \frac{1}{4}$
11. $\frac{8}{9}$
12. $\frac{1}{4}, \frac{1}{3}, \frac{1}{2}$
13. $\frac{2}{3}, \frac{3}{4}, \frac{4}{5}$
14. $1\ \frac{1}{8}, \frac{10}{8}, 1\ \frac{3}{4}$
15. $\frac{10}{1000}, \frac{2}{100}, \frac{3}{10}$
16. $\frac{9}{8}, 2\ \frac{1}{2}, 3\ \frac{1}{4}$
17. $\frac{3}{24}, \frac{7}{12}, \frac{5}{6}$
18. Dog Lake
19. Willie

Post-Test

Comparing Fractional Values

Circle the largest in value:

1. $\frac{3}{5}$, $\frac{4}{5}$

2. $\frac{1}{5}$, $\frac{1}{6}$, $\frac{1}{7}$

3. $\frac{2}{3}$, $\frac{1}{3}$, $\frac{1}{4}$

Circle the lowest in value:

4. $\frac{2}{8}$, $\frac{3}{16}$, $\frac{4}{32}$

5. $2\frac{1}{2}$, $3\frac{1}{4}$, $3\frac{5}{4}$

6. $\frac{9}{8}$, $1\frac{3}{8}$, $1\frac{4}{16}$

Put the following fractions in order staring from the highest to the lowest:

7. $\frac{7}{8}$, $1\frac{1}{8}$, $\frac{3}{4}$

8. $\frac{1}{4}$, $\frac{7}{8}$, $\frac{3}{4}$, $1\frac{1}{2}$

9. $3\frac{2}{3}$, $3\frac{4}{5}$, $2\frac{9}{4}$

Practical Application:

10. Jim had to drill a hole in his wall 1/4" wide. His drill sizes were 5/16, 4/32, 8/32. Which one should he use?

## Answers

1. $\frac{4}{5}$

2. $\frac{1}{5}$

3. $\frac{2}{3}$

4. $\frac{4}{32}$

5. $2\frac{1}{2}$

6. $\frac{9}{8}$

7. $1\frac{1}{8}, \frac{7}{8}, \frac{3}{4}$

8. $1\frac{1}{2}, \frac{7}{8}, \frac{3}{4}, \frac{1}{4}$

9. $2\frac{9}{4}, 3\frac{4}{5}, 3\frac{2}{3}$

10. $\frac{8}{32}$

Objective #14: The student will be able to read and write decimals.

Pre-Test

Reading and Writing Decimals

Read the following decimals:

1. .2
2. .007
3. 2.08
4. 127.771
5. 1789.0011

Write the following in decimal form:

6. one-tenth
7. four thousandths
8. seven and thirty-three hundredths
9. one thousand twenty-one and two tenths

Practical Application:

10. John had to write out a check for $789.61. How would he do this?

Answers

1. two tenths
2. seven thousandths
3. two and eight hundredths
4. one hundred twenty-seven and seven hundred seventy-one thousandths
5. one thousand seven hundred eighty-nine and eleven ten thousandths
6. .1
7. .004
8. 7.33
9. 1021.2
10. Seven hundred eighty-nine and $\frac{61}{100}$ ----------

## Review Exercises

### Reading and Writing Decimals

Write the following decimals:

1. six tenths
2. ten hundredths
3. twenty thousandths
4. Seven and three tenths
5. fourteen and three fifths
6. two hundred twenty-nine and twelve ten thousandths
7. nineteen and seven-eighths
8. four and four fifths
9. one thousand twenty-one and sixteen thirty-seconds
10. seven and one-third
11. four and three-sevenths

Read the following decimals:

12. .5
13. .333
14. .12
15. .001
16. 12.0001
17. 45.01654
18. .55
19. .26
20. 1000.001
21. 123.123

Practical Application:

22. Lucy's odometer showed 999.9. How do you read this?
23. How do you write nine hundred ninety-nine times out of a thousand in decimal form?

## Answers

1. .6
2. .02
3. .020
4. 7.3
5. 14.6
6. 229.0012
7. 19.875
8. 4.8
9. 1021.5
10. 7.333
11. 4.4285
12. five tenths
13. three hundred thirty-three thousandths
14. twelve hundredths
15. one thousandth
16. twelve and one ten thousandths
17. forty-five and one thousand six hundred fifty-four one hundred thousandths
18. fifty-five hundredths
19. twenty-six hundredths
20. one thousand and one thousandth
21. one hundred twenty-three and one hundred twenty-three thousandths
22. nine hundred ninety-nine and nine tenths
23. .999

## Post-Test

### Reading and Writing Decimals

Write the following in decimal form:

1. three-fifths
2. four tenths
3. twenty-two and seven-eighths
4. one hundred forty-one and seventeen hundredths
5. four thousand one and sixty-two ten thousandths

Read the following decimals:

6. .001
7. 21.789
8. 3210.0002
9. 781.781

Practical Application:

10. A meter is 39.37 inches long. How do you read 39.37?

## Answers

1. .6
2. .4
3. 22.875
4. 141.17
5. 4001.0062
6. one thousandth
7. twenty-one and seven hundred eighty-nine thousandths
8. three thousand two hundred ten and two ten thousandths
9. seven hundred eighty-one and seven hundred eighty-one thousandths
10. thirty-nine and thirty-seven one hundredths inches

Objective #15: The student will be able to add and subtract decimals.

Pre-Test

Adding and Subtracting Decimals

Add the following decimals:

1. $\begin{array}{r} .381 \\ .206 \\ +\ .519 \\ \hline \end{array}$

2. $\begin{array}{r} 86.219 \\ 1.001 \\ +\ 6.504 \\ \hline \end{array}$

3. $\begin{array}{r} .5 \\ +\ .7 \\ \hline \end{array}$

4. $\begin{array}{r} .11 \\ +\ .23 \\ \hline \end{array}$

5. $\begin{array}{r} .999 \\ +\ .001 \\ \hline \end{array}$

6. $\begin{array}{r} .1981 \\ +\ .9879 \\ \hline \end{array}$

Subtract the following decimals:

7. $\begin{array}{r} .9 \\ -\ .7 \\ \hline \end{array}$

8. $\begin{array}{r} .786 \\ -\ .494 \\ \hline \end{array}$

9. $\begin{array}{r} .90001 \\ -\ .87776 \\ \hline \end{array}$

Practical Application:

10. Henry spent $7.81 at the store, $7.99 at the gas station and $2.37 for a book. How much change did he have from a twenty dollar bill?

## Answers

1. 1.106
2. 93.724
3. 1.2
4. .34
5. 1.000
6. 1.1860
7. .2
8. .292
9. .02225
10. $1.83

## Review Exercises

### Adding and Subtracting Decimals

Add these numbers:

1. $\begin{array}{r} .5 \\ +\ .4 \\ \hline \end{array}$

2. $\begin{array}{r} .7 \\ +\ .89 \\ \hline \end{array}$

3. $\begin{array}{r} 17.119 \\ +\ 8.287 \\ \hline \end{array}$

4. $\begin{array}{r} .8119 \\ .2361 \\ +\ .4611 \\ \hline \end{array}$

5. $\begin{array}{r} .0001 \\ +\ .0199 \\ \hline \end{array}$

Add these decimals:

6. .116, 1.21, 78.01

7. 16.119, 28, .110

8. .0512, .28, 17.1

9. 24.12, 16.157, .00001

Subtract these numbers:

10. $\begin{array}{r} .9 \\ -\ .5 \\ \hline \end{array}$

11. $\begin{array}{r} .81 \\ -\ .20 \\ \hline \end{array}$

12. $\begin{array}{r} .231 \\ -\ .021 \\ \hline \end{array}$

13. $\begin{array}{r} 22.119 \\ -\ 1.118 \\ \hline \end{array}$

14. $\begin{array}{r} 100.001 \\ -\ .999 \\ \hline \end{array}$

15. $\begin{array}{r} 23.11 \\ -\ .66 \\ \hline \end{array}$

16. $\begin{array}{r} 1.35 \\ -\ .99 \\ \hline \end{array}$

17. $\begin{array}{r} 28 \\ -\ .001 \\ \hline \end{array}$

Practical Application:

18. Eleanor spent \$1.01, \$.69, \$2.37, \$4.20, \$16.21, and \$.59 at the grocery store. How much did she spend?

19. Ted paid the following bills for the month of July. \$300.00, \$298.00, \$41.23, \$16.11, \$45.00, \$15.20, \$6.75 and \$30.00. How much did he have left from his \$900 pay check?

## Answers

1. .9
2. 1.59
3. 25.406
4. 1.5091
5. .0200
6. 79.336
7. 44.229
8. 17.4312
9. 40.27701
10. .4
11. .61
12. .210
13. 21.001
14. 99.002
15. 22.45
16. .36
17. 27.999
18. 25.07
19. 147.71

## Post-Test

### Adding and Subtracting Decimals

Add the following numbers:

1. $\begin{array}{r} .7 \\ +\ .8 \\ \hline \end{array}$

2. $\begin{array}{r} .71 \\ +\ 1.09 \\ \hline \end{array}$

3. $\begin{array}{r} .111 \\ .218 \\ +\ .918 \\ \hline \end{array}$

4. $\begin{array}{r} 17.009 \\ +\ .991 \\ \hline \end{array}$

Subtract the following numbers:

5. $\begin{array}{r} .9 \\ -\ .7 \\ \hline \end{array}$

6. $\begin{array}{r} 21.01 \\ -\ 6.81 \\ \hline \end{array}$

Add these numbers:

7. 1.019, 17.86, .001

Subtract the following:

8. $\begin{array}{r} 16.108 \\ -\ 15.819 \\ \hline \end{array}$

Add this number:

9. 2.5, 117, 21.81

Practical Application:

10. A meter is 39.37 inches long. A yard is 36 inches. How much longer is a meter than a yard.

## Answers

1. 1.5
2. 1.80
3. 1.247
4. 18.000
5. .2
6. 14.20
7. 18.880
8. .289
9. 141.31
10. 3.37

| TITLE: Adult Education Basic Arithmetic Computation Skills | TOPIC: Mulitiplication of Decimals | 117-016 |
|---|---|---|

Objective #16: The student will be able to multiply decimals.

Pre-Test

Multiplication of Decimals

Multiply the following numbers:

1. $\begin{array}{r} 6 \\ \times\ .8 \\ \hline \end{array}$

2. $\begin{array}{r} .9 \\ \times\ 8 \\ \hline \end{array}$

3. $\begin{array}{r} 1.9 \\ \times\ .3 \\ \hline \end{array}$

4. $\begin{array}{r} .17 \\ \times\ 1.3 \\ \hline \end{array}$

5. $\begin{array}{r} .24 \\ \times\ .6 \\ \hline \end{array}$

6. 5 x .013

7. .04 x 3

8. 2.06 x .2

9. .4 x .7

Practical Application:

10. If it costs $.20 to mail a wedding invitation, how much will it cost to mail 325 wedding invitations?

## Answers

1. 4.8
2. 7.2
3. .57
4. .221
5. .144
6. .065
7. .12
8. .412
9. .28
10. $65.00

## Review Exercises

### Multiplication of Decimals

Multiply the following decimals:

| | | | | |
|---|---|---|---|---|
| 1. 5 x .7 | 2. .8 x 4 | 3. .7 x .2 | 4. .13 x .3 | 5. .15 x .9 |
| 6. 2.4 x 5 | 7. 1.7 x 1.2 | 8. 60 x .04 | 9. 7.5 x .3 | 10. 1.08 x .03 |
| 11. .05 x .07 | 12. 1.803 x .04 | 13. .5 x .6 | 14. .9 x .1 | 15. .003 x 4 |
| 16. 2.3 x 1.2 | 17. 4.9 x 2.3 | 18. 7.2 x 5 | 19. 2.005 x .7 | 20. 5.7 x .04 |

21. .06 x 5  22. .03 x .8  23. .5 x .8  24. .13 x .9

Practical Application:

25. If a certain brand of oil sells for $1.42 per quart, how much would 5 quarts sell for?

26. If hamburger sells for $1.60 per pound, how much does 2.1 pounds cost?

27. If gasoline sells for $1.27 per gallon, how much does 19 gallons cost?

## Answers

1. 3.5
2. 3.2
3. .14
4. .039
5. .135
6. 12
7. 2.04
8. 2.4
9. 2.25
10. .0324
11. .0035
12. .07212
13. .3
14. .09
15. .012
16. 2.76
17. 11.27
18. 36
19. 1.4025
20. .228
21. .3
22. .024
23. .4
24. .117
25. $7.10
26. $3.36
27. $24.13

Post-Test

Multiplication of Decimals

Multiply the following decimals:

1. 29 x .8

2. .7 x 6

3. 1.9 x .9

4. .17 x 1.6

5. .12 x .8

6. 7 x .008

7. .06 x 8

8. 4.07 x .7

9. 10.6 x .4

Practical Application:

10. If a worker earns $7.82 per hour, how much does that worker earn in an 8-hour shift?

## Answers

1. 23.2
2. 4.2
3. 1.71
4. .272
5. .096
6. .056
7. .48
8. 2.849
9. 4.24
10. $62.56

Objective #17: The student will be able to divide decimals.

Pre-Test

Division of Decimals

Divide the following numbers:

1. $4\overline{)12.4}$

2. $6\overline{)7.26}$

3. $5\overline{).1085}$

4. $.8\overline{)7.28}$

5. $1.2\overline{)5.844}$

6. $.07\overline{)1.078}$

7. $1.6128 \div 1.6$

8. $1.28 \div .008$

9. $.0072 \div .018$

Practical Application:

10. If a 24-ounce can of juice sells for $.72, what is the cost per ounce?

## Answers

1. 3.1
2. 1.21
3. .0217
4. 9.1
5. 4.87
6. 15.4
7. 1.008
8. 160
9. .4
10. $.03

## Review Exercises

### Division of Decimals

Work the following problems:

1. $3\overline{)5.4}$

2. $4\overline{)3.04}$

3. $13\overline{)13.78}$

4. $5\overline{).95}$

5. $.8\overline{).0408}$

6. $.006\overline{)3}$

7. $2.4\overline{)7.776}$

8. $.13\overline{).0169}$

9. $14\overline{)16.8}$

10. $.19\overline{)6.65}$

11. $17.3\overline{)103.8}$

12. $3\overline{).0051}$

13. $2.1\overline{).0273}$

14. $147\overline{)73.5}$

15. $4\overline{)8.036}$

16. $.57\overline{).1197}$

17. $10\overline{)42.6}$

18. $.01\overline{)50}$

19. $100\overline{)1.4}$

20. $2.5\overline{)20}$

21. $4\overline{)2}$

22. $8.4 \div .04$

23. $12.6 \div 1.4$

24. $7 \div 4$

Practical Application:

25. If a car travels 533.8 miles on 17 gallons of gasoline, how many miles per gallon does the car average?

26. If a magazine subscription costs $18.84 for 12 issues, what is the price per issue?

27. If a worker earns $5.10 per hour and the worker's paycheck is for $183.60, how many hours did he work?

## Answers

1. 1.8
2. .76
3. 1.06
4. .19
5. .051
6. 500
7. 3.24
8. .13
9. 1.2
10. 35
11. 6
12. .0017
13. .013
14. .5
15. 2.009
16. .21
17. 4.26
18. 5,000
19. .014
20. 8
21. .5
22. 210
23. 9
24. 1.75
25. 31.4 mpg
26. $1.57
27. 36 hours

## Post-Test

### Division of Decimals

Work the following problems:

1. $6\overline{)\ 18.6}$

2. $8\overline{)\ 7.28}$

3. $5\overline{)\ .2115}$

4. $.9\overline{)\ 8.19}$

5. $1.7\overline{)\ 6.12}$

6. $.04\overline{)\ 6.356}$

7. $.819 \div 2.1$

8. $.09 \div .009$

9. $.0408 \div .017$

Practical Application:

10. If the total bill for a new refrigerator is $652.86 and it is to be paid for in 18 equal payments, how much is each payment?

## Answers

1. 3.1
2. .91
3. .0423
4. 9.1
5. 3.6
6. 158.9
7. .39
8. 10
9. 2.4
10. $36.27

Objective #18: The student will be able to change fractions to decimals and decimals to fractions.

Pre-Test

Changing Fractions to Decimals and Decimals to Fractions

Convert the following fractions to decimals:

1. $\frac{1}{2}$ 2. $2\frac{1}{3}$ 3. $\frac{15}{4}$ 4. $3\frac{1}{9}$ 5. $1\frac{3}{8}$

Convert the following decimals to fractions or mixed numbers. All answers are to be in lowest terms.

6. .7 7. 4.03 8. 5.2 9. 6.35

Practical Application:

10. If Mr. and Mrs. Smith are to pay 2/5 of the expenses for a vacation with friends and the expenses are $979.50, how much should they pay?

## Answers

1. .5
2. $2.\overline{3}$ or $2.33\frac{1}{3}$
3. 3.75
4. $3.\overline{1}$ or $3.11\frac{1}{9}$
5. 1.375
6. $\frac{7}{10}$
7. $4\frac{3}{100}$
8. $5\frac{1}{5}$
9. $6\frac{7}{20}$
10. $391.80

## Review Exercises

### Changing Fractions to Decimals and Decimals to Fractions

Convert the following fractions to decimals:

1. $\frac{1}{4}$ 2. $\frac{3}{2}$ 3. $\frac{2}{3}$ 4. $\frac{3}{5}$ 5. $2\frac{1}{8}$

6. $7\frac{3}{10}$ 7. $2\frac{5}{9}$ 8. $\frac{7}{5}$ 9. $7\frac{3}{4}$

10. $8\frac{1}{2}$ 11. $3\frac{5}{8}$ 12. $4\frac{1}{3}$

Convert the following decimals to fractions or mixed numbers. All answers are to be in the lowest terms.

13. .5 14. .23 15. 1.01 16. 5.09

17. .014 18. 3.1 19. 4.8 20. .8

Practical Application:

21. If a jogger has run 3.25 miles of a 13-mile road race, what fractional part of the race has she completed?

22. If a scale drawing is 2/25 of the actual dimensions, how long would a desk be if the diagram measures 5.2 inches long?

23. If a worker puts 2/5 of his paycheck into savings and his paycheck is $225.20, how much is put into savings?

## Answers

1. .25
2. 1.5
3. $.\overline{6}$ or .66 $\frac{2}{3}$
4. .6
5. 2.125
6. 7.3
7. $2.\overline{5}$ or 2.55 $\frac{5}{9}$
8. 1.4
9. 7.75
10. 8.5
11. 3.625
12. $4.\overline{3}$ or 4.33 $\frac{1}{3}$
13. $\frac{1}{2}$
14. $\frac{23}{100}$
15. $1\ \frac{1}{100}$
16. $5\ \frac{9}{100}$
17. $\frac{7}{500}$
18. $3\ \frac{1}{10}$
19. $4\ \frac{4}{5}$
20. $\frac{4}{5}$
21. $\frac{1}{4}$
22. 65 inches
23. $90.08

## Post-Test

Changing Fractions to Decimals and Decimals to Fractions

Convert the following fractions to decimals:

1. $\frac{3}{4}$ 2. $\frac{5}{2}$ 3. $3\frac{1}{3}$

4. $\frac{9}{4}$ 5. $2\frac{3}{8}$

Convert the following decimals to fractions or mixed numbers. All answers are to be in lowest terms.

6. .9 7. 4.07 8. 6.4 9. 1.15

Practical Application:

10. If a raw steak weighs 2.2 lbs. and it weighs 7/10 of that amount after it is cooked, what is the final weight of the steak?

## Answers

1. .75
2. 2.5
3. $3.\overline{3}$ or $3.33\frac{1}{3}$
4. 2.25
5. 2.375
6. $\frac{9}{10}$
7. $4\frac{7}{100}$
8. $6\frac{2}{5}$
9. $1\frac{3}{20}$
10. 1.54 lbs.

Objective #19: The student will be able to compare decimal values.

Pre-Test

Comparing Decimal Values

1. Which is smaller? .6 or .06

2. Which is larger? 1.05 or 1.005

3. Place the following decimals in order smallest to largest:

.09 .86 .0093 1.04 1.4 1

Replace the ? with one of the following: $<$ = $>$

4. .08 ? .80 5. .61 ? 6.1 6. .7 ? .7000

7. .49 ? .4871 8. 6.541 ? 6.05 9. .1428 ? .143

Practical Application:

10. If a machine part is to be between 2.746 inches and 2.796 inches in length which of the following is not acceptable?

2.68 inches 2.7777 inches 2.75 inches 2.79 inches

## Answers

1. .06
2. 1.05
3. .0093, .09, .86, 1, 1.04, 1.4
4. <
5. <
6. =
7. >
8. >
9. <
10. 2.68 inches

## Review Exercises

### Comparing Decimal Values

Arrange in order beginning with the smallest:

1. .65, .6, .648
2. 1.2, 1.05, 1.506
3. .002, .02, .200
4. 25.106, 25.061, 25.601
5. 5, 5.01, .501
6. 1, .998, 1.00006
7. 1.113, 1.065, 1.2
8. .4, .378, .2000

Replace the ? with one of the following: $<$ $=$ $>$

9. .75 ? .750
10. .43 ? .43001
11. 1.402 ? 1.4002

Practical Application:

12. If a fishing line if to have a diameter of between .0084" and .0096", which of the following is too large? .0088" or .01"

13. If the three fastest qualifying speeds for a car race were 125.068 mph, 125.501 mph, and 125.003 mph, arrange the speeds in order of finish beginning with the fastest.

14. If a probability of 0 means no way to win and a probability of 1 means no way to lose, should a person expect to win a contest if the probability of winning is .0000001?

## Answers

1. .6, .648, .65
2. 1.05, 1.2, 1.506
3. .002, .02, .200
4. 25.061, 25.106, 25.601
5. .501, 5, 5.01
6. .998, 1, 1.00006
7. 1.065, 1.113, 1.2
8. .2000, .378, .4
9. =
10. <
11. >
12. .01"
13. 125.501 mph, 125.068 mph, 125.003 mph
14. No

## Post-Test

### Comparing Decimal Values

1. Which is smaller? .105 or .12

2. Which is larger? .865 or .9007

3. Place the following decimals in order smallest to largest:

   .48 3 3.006 4.8 .00987 .1

Replace the ? with one of the following: < = >

4. .94 ? .094 5. 5.6 ? 5.61 6. 1.82 ? 1.0082

7. .1684 ? .169 8. 7.24 ? 7.2400 9. .856 ? .98

Practical Application:

10. An inspector is to reject a shipment of a certain product only if the average weight is below 7.475 ounces. Which of the following average weights would cause the inspector to reject a shipment?

    7.54 ounces 7.782 ounces 7.436 ounces 7.500 ounces

## Answers

1. .105
2. .9007
3. .00987, .1, .48, 3, 3.006, 4.8
4. >
5. <
6. >
7. <
8. =
9. <
10. 7.436 ounces

Objective #20: The student will be able to convert from one form to another fractions, decimals and percents.

## Pre-Test

Converting From One Form to Another Fractions, Decimals and Percents

Fill in the blanks:

| | Fraction | Decimal | Percent |
|---|---|---|---|
| 1. | $\frac{2}{5}$ | _____ | 40% |
| 2. | _____ | .79 | 79% |
| 3. | $\frac{2}{3}$ | .66 $\frac{2}{3}$ | _____ |
| 4. | $\frac{1}{4}$ | _____ | 25% |
| 5. | _____ | .83 | 83% |
| 6. | $1\frac{1}{5}$ | 1.2 | _____ |
| 7. | $\frac{5}{8}$ | _____ | 62.5% |
| 8. | $\frac{1}{6}$ | .16 $\frac{2}{3}$ | _____ |
| 9. | _____ | 1.91 | 191% |

Practical Application:

10. If a worker has 1/25 of his check withheld for state taxes, what percent of his check is withheld for state taxes?

## Answers

1. .4
2. $\frac{79}{100}$
3. $66\frac{2}{3}\%$
4. .25
5. $\frac{83}{100}$
6. 120%
7. .625
8. $16\frac{2}{3}\%$
9. $1\frac{91}{100}$
10. 4%

## Review Exercise

Converting From One Form to Another Fractions, Decimals and Percents

Fill in the blanks:

| | Fraction | Decimal | Percent | | Fraction | Decimal | Percent |
|---|---|---|---|---|---|---|---|
| 1. | $\frac{17}{20}$ | _____ | 85% | 2. | _____ | .01 | 1% |
| 3. | _____ | 1.03 | 103% | 4. | $\frac{1}{2}$ | .5 | _____ |
| 5. | $\frac{5}{6}$ | $.83\frac{1}{3}$ | _____ | 6. | $\frac{1}{3}$ | _____ | $33\frac{1}{3}\%$ |
| 7. | $\frac{7}{8}$ | .875 | _____ | 8. | $\frac{3}{4}$ | _____ | 75% |
| 9. | $\frac{3}{5}$ | _____ | 60% | 10. | _____ | .13 | 13% |
| 11. | _____ | .011 | 1.1% | 12. | $\frac{7}{10}$ | .7 | _____ |

Practical Application:

13. If 37.5% of the family budget goes for food, what fractional part of the family budget goes for food?

14. If a company must lay off 1/10 of its workers, what percent of its workers are to be laid off?

15. If a stores advertises a 20% discount on its merchandise, what decimal value will be used to calculate the discount?

## Answers

1. .85
2. $\frac{1}{100}$
3. $1\ \frac{3}{100}$
4. 50%
5. $83\ \frac{1}{3}\%$
6. $.33\ \frac{1}{3}$
7. 87.5%
8. .75
9. .6
10. $\frac{13}{100}$
11. $\frac{11}{1000}$
12. 70%
13. $\frac{3}{8}$
14. 10%
15. .2

## Post-Test

### Converting From One Form to Another Fractions, Decimals and Percents

Fill in the blanks:

| | Fraction | Decimal | Percent |
|---|---|---|---|
| 1. | $\frac{3}{2}$ | _____ | 150% |
| 2. | _____ | .23 | 23% |
| 3. | $1\frac{1}{4}$ | 1.25 | _____ |
| 4. | $\frac{1}{5}$ | _____ | 20% |
| 5. | $\frac{1}{8}$ | .125 | _____ |
| 6. | $\frac{2}{9}$ | _____ | $22\frac{2}{9}\%$ |
| 7. | _____ | .07 | 7% |
| 8. | _____ | .001 | .1% |
| 9. | $\frac{7}{25}$ | .28 | _____ |

Practical Application:

10. If a thread will break at 2.64 lbs. of pressure, will the thread support a 2 5/8 lbs. object hanging from it?

## Answers

1. 1.5
2. $\frac{23}{100}$
3. 125%
4. .2
5. 12.5%
6. $.22\frac{2}{9}$
7. $\frac{7}{100}$
8. $\frac{1}{1000}$
9. 28%
10. Yes

Objective #21: The student will be able to read, interpret and solve simple problems involving percent.

Pre-Test

Solving Percent Problems

Solve the following problems:

1. 8% of $293 is _____.

2. 73% of $298.65 is _____.

3. 12½% of $35,000 is _____.

4. _____% of 5 is 2.

5. What % of 412 is 45.32 _____.

6. What % of 200 is 16 _____.

7. 15 is 30% of what number _____.

8. 12 is 40% of what number _____.

9. 16 is 25% of what number _____.

Practical Application:

10. Linda wanted to buy a new dress that costs $53.95 at K-Mart. The weekly advertisement in the newspaper stated that K-Mart was marking all their clothes 30% off. How much would the dress cost buying it at the sale?

## Answers

1. $23.44
2. $218.01
3. $4,375
4. 40%
5. 11%
6. 8%
7. 50
8. 30
9. 64
10. $37.77

## Review Exercises

### Solving Percent Problems

Solve the following problems:

1. 6% of $330 is _____.
2. 33% of $29.98 is _____.
3. 89% of $298.65 is _____.
4. 54% of $156.86 is _____.
5. 37% of $331.01 is _____.
6. 26% of $21 is _____.
7. 15% of $78.30 is _____.
8. 80% of 44 is _____.
9. 2½% of $345 is _____.
10. 5½% of $2,000 is _____.
11. 19 is what percent of 38 _____.
12. _____% of 38 is 19.
13. What percent of 32 is 8 _____.
14. 60 is what percent of 200 _____.
15. 2.07 is what % of 69 _____.
16. What % of 96 is 48 _____.
17. 16 is 80% of what number _____.
18. 12 is 10% of _____.
19. 15 is 5% of what number_____.
20. 12 is 40% of _____.
21. 80 is 40% of what number _____.
22. 8 is 25% of _____.
23. 16 is 25% of what number _____.
24. 21 is 75% of _____.

Practical Application:

25. Bill works at a store that gives all of their employees 12% off of the regular price. What will anew $500 rifle cost Bill?
26. Sales tax in Utah is 5% of the total sales. If a new diesel Volkswagon cost $8,525.00, what will the sales tax be?
27. Jack noticed that his check of $500 gross pay had $30 deducted for F.I.C.A. (Social Security). What % of his check did they deduct for F.I.C.A.?

## Answers

1. $19.80
2. $9.89
3. $265.80
4. $84.70
5. $122.47
6. $5.46
7. $11.75
8. $35.20
9. $8.63
10. $110
11. 50%
12. 50%
13. 25%
14. 30%
15. 3%
16. 50%
17. 20
18. 120
19. 300
20. 30
21. 200
22. 32
23. 64
24. 28
25. $440
26. $426.25
27. 6%

Post-Test

Solving Percent Problems

Solve the following problems:

1. 9% of $253 _____.
2. 75% of $288.65 _____.
3. 10½% of $45,000 _____.
4. _____% of 20 is 5.
5. What % of 412 is 53.56 _____.
6. What % of 300 is 24 _____.
7. 15 is 60% of what number _____.
8. 12 is 20% of what number _____.
9. 20 is 40% of what number _____.

Practical Application:

10. A local bank is advertising 10.5% annual interest for savings certificates. How much interest would a person receive for a $600 certificate in one year?

## Answers

1. $22.77
2. $216.49
3. $4,725
4. 25%
5. 13%
6. 8%
7. 25
8. 60
9. 50
10. $63

Objective #22: The student will be able to convert English units of measure to larger and/or smaller units of measure.

## Pre-Test

### Converting Units of Measure
(Refer to Table I)

Complete the following problems:

1. Change $2\frac{1}{2}$ feet to inches _____.

2. Change 3 pounds 5 ounces to ounces _____.

3. Change 3 gallons to quarts _____.

4. Reduce 33 inches to feet and inches _____.

5. Reduce 5,280 seconds to minutes _____.

6. Change 288 square inches to square feet _____.

7. Change 3 cubic feet to gallons _____.

8. How many hours in one year _____.

9. Reduce 2 bushels to quarts _____.

Practical Application:

10. If a service station has a tank that holds 3,000 cubic feet, and gasoline costs them 95¢ a gallon, how much will it cost to fill the tank? _____

## Answers

1. 30 inches
2. 53 ounces
3. 12 quarts
4. 2 feet 9 inches
5. 88 minutes
6. 2 square feet
7. 22½ gallons
8. 8,760 hours
9. 64 quarts
10. $21,375

## Review Exercises

### Converting Units of Measure

Change the following denominate numbers to the one indicated. (Refer to Table I)

1. .15 hour is _____ minutes.
2. $\frac{3}{4}$ ton is _____ pounds.
3. 12 tablespoons is _____ teaspoons.
4. 2 cups is _____ teaspoons.
5. $\frac{2}{3}$ yards is _____ inches.
6. 2 gallons is _____ quarts.
7. 37 minutes is _____ seconds.
8. 84 units is _____ dozen.
9. 3,500 pounds is _____ hundred weights.
10. 27 inches is ____ ft. ____ inches.
11. 12 ounces is _____ pounds.
12. 19 quarts is _____ gallons.
13. 39 square feet is _____ square yards.
14. 2 feet 8 inches is _____ yards.
15. 87 cubic feet is _____ gallons.
16. 64 ounces is _____ quarts.
17. 3 days is _____ minutes.
18. 1500 seconds is _____ minutes.
19. 1500 minutes is _____ seconds.
20. 30 rods is _____ feet.
21. 64 ounces is _____ pints.
22. 17 bushel is _____ pecks.
23. 5 cups is _____ tablespoons.
24. 2 acres is _____ square feet.

25. A small farm was measured and found to contain 108,900 square feet and was listed at $10,000 an acre. How much did it cost?

26. If one quart of liquid is equal to .946 liters, which would be the better buy. One liter of gasoline for 40¢ or a gallon of gasoline for $1.35.

27. A recipe calls for ½ cup of milk, and Mary only has a tablespoon to measure with. How many tablespoons should she use?

## Answers

1. 9 minutes
2. 1500 pounds
3. 36 teaspoons
4. 96 teaspoons
5. 24 inches
6. 8 quarts
7. 2,220 seconds
8. 7 dozen
9. 35 hundredweight
10. 2 feet 3 inches
11. 3/4 pound
12. 4 3/4 gallons
13. 4 1/3 square yards
14. 8/9 yard
15. 652.5 gallons
16. 2 quarts
17. 4,320 minutes
18. 25 minutes
19. 90,000 seconds
20. 495 feet
21. 4 pints
22. 68 pecks
23. 80 tablespoons
24. 87,120 square feet
25. $25,000
26. One gallon of gasoline at $1.35
27. 4 tablespoons

Post-Test

Converting Units of Measure
(Refer to Table I)

Change the following units of measure:

1. Change 3½ feet to inches _____

2. Change 4 lbs. 3 ounces to ounces _____

3. Change 7 gallons to quarts _____

4. Reduce 49 inches to feet and inches _____

5. Reduce 1800 seconds to minutes _____

6. Change 432 square inches to square feet _____

7. Change 5.5 cubic feet to gallons _____

8. How many seconds in 30 days _____

9. Reduce 2 bushel to quarts _____

Practical Application:

10. Gold is weighed using troy ounces, which consist of 12 troy ounces per pound. If gold was listed at $800 per ounce, how much would 2½ pounds of gold be worth?

## Answers

1. 42 inches
2. 67 ounces
3. 28 quarts
4. 4 feet 1 inch
5. 30 minutes
6. 3 square feet
7. 41¼ or 41.25 gallons
8. 2,592,000 seconds
9. 64 quarts
10. $24,000

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Objective #23: The student will be able to add, subtract, multiply and divide using English units of measure.

## Pre-Test

### Adding, Subtracting, Multiplying and Dividing English Measurements

Solve the following problems:

1. Add 5 yards 3 inches to 2 yards 6 inches: _____yds. _____in.

2. Add 2 lbs. 4 ounces and 10 lbs. 13 ounces: _____lbs. _____oz.

3. Take 4 yds. 1 ft. 8 in. from 7 yds. 1 ft. 9 in.:

   _____yds. _____ft. _____in.

4. Take 18 gallons 3 quarts from 27 gallons: _____gal. _____qts.

5. Multiply 3 minutes 11 seconds by 5: _____min. _____sec.

6. Multiply 2 gallons 3 quarts by 9: _____gal. _____ qts.

7. Divide 9 gallons 3 quarts by 3: _____gal. _____qts.

8. Divide 8 gallons 3 quarts by 3: _____gal. _____qts.

Practical Application:

9. A bolt of cotton material contains 48 yards. A dress takes a piece of material 4 feet long. How many dresses could be made from the bolt?

10. A carpenter asked his helper to cut some studs to build a wall 8 feet high. The end plates, one at the top and one at the bottom are 1½ inches thick. How long should he cut the studs so the wall will be 8 feet high?

## Answers

1. 7 yds. 9 inches
2. 13 lbs. 1 oz.
3. 3 yds. 1 in.
4. 8 gals. 1 qt.
5. 15 min. 55 sec.
6. 24 gal. 3 qts.
7. 3 gal. 1 qt.
8. 2 gal. 3 2/3 qts.
9. 36 dresses
10. 7 feet 9 inches

## Review Exercises

### Adding, Subtracting, Multiplying, and Dividing English Measurements

Add and reduce to the units indicated:

1. 36 min.
   15 min.
   + 27 min.

   ___hr. ___min.

2. 2 ft. 5 in.
   2 ft. 10 in.
   + 1 ft. 11 in.

   ___ft.____in.

3. 28 lbs. 12 oz.
   10 oz.
   + 24 lbs. 6 oz.

   ____lbs. ___oz.

4. 3 qts 1 pt.
   1 qt. 1 pt.
   + 2 qt. 1 pt.

   ___qts___pt.

5. 3 days 12 hrs.
   + 2 days 23 hrs.

   ___days ___hrs.

6. 3 c. 9 T. 1 t.
   4 c. 7 T. 2 t.
   + 12 T. 1 t.

   ___c.___T.___t.

Subtract:

7. 3 min. 45 sec.
   - 1 min. 45 sec.

   ____min.____sec.

8. 5 gal. 3 qts.
   - 2 gal. 1 qt. 1 pt.

   ____gal.___qts.__pt.

9. 3 yds. 1 ft.
   - 1 yd. 2 ft.

   ____yds.___ft.

Multiply:

10. 9 hr. 12 min.
    x 6

    ____hr.____min.

11. 8 T. 2 t.
    x 12

    ___T.___t.

12. 3.5 qts.
    x 9

    ____gal._____qt.____pt.

Divide:

13. 3) 12 lbs. 15 oz.

    _____lbs._____oz.

14. 12) 14 hrs. 3 min.

    _____hrs.____min.____sec.

15. 15) 26 yds. 3 in.

    _____yds._____ft._____in.

Practical Application:

16. Find the cost of 2 pounds of nuts at 25¢ an ounce.

17. A stove pipe from the stove to the wall measures 3 feet 2½ inches and must extend through an 8-inch wall 9 inches. How long must the pipe be?

18. How many gallons, quarts, and pints would each of three families receive if they made one barrel of apple cider?

## Answers

1. 1 hr. 18 min.
2. 7 ft. 2 in.
3. 53 lbs. 12 oz.
4. 7 qts. 1 pt.
5. 6 days 11 hrs.
6. 8 c. 13 T. 1 t.
7. 2 min.
8. 3 gal. 1 qt. 1 pt.
9. 1 yd. 2 ft.
10. 55 hrs. 12 min.
11. 104 T. 0 t. (6 c. 8 T.)
12. 7 gal. 3 qt. 1 pt.
13. 4 lbs. 5 oz.
14. 1 hr. 10 min. 15 sec.
15. 1 yd. 2 ft. 2.6 inches
16. $8.00
17. 4 ft. 7½ inches
18. 10 gal. 2 qts.

Post-Test

Adding, Subtracting, Multiplying, and Dividing English Measurements

Solve the following:

1. Add 6 yds. 2 in. and 2 yds 5 in.: _____yds. _____in.

2. Add 3 lbs. 5 oz. and 11 lbs. 15 oz.: _____lbs. _____oz.

3. Take 3 yds. 2 ft. 7 in. from 4 yds. 3 ft. 9 in.:

   _____yds. _____ft. _____in.

4. Take 13 gallons 2 qts. from 21 gal.: _____gal. _____qts.

5. Multiply 5 min. 7 sec. x 6: _____min. _____sec.

6. Multiply 5 gallons 3 qts x 5: _____gal. _____qts.

7. Divide 15 gallons 10 quarts by 5: _____gallons _____quarts

8. Divide 7 gallons by 4: _____gallons _____quarts

Practical Application:

9. How many quarts of fruit can be made with a gallon of sugar if each quart required ½ cup of sugar?

10. A carpenter asked his helper to cut some boards to make a book shelf between two walls 6 ft. 9 inches apart, remembering that the ends of the book shelve are boards 3/4 inches thick. How long should he cut the boards after he subtracts off the ends?

## Answers

1. 8 yds. 7 in.
2. 15 lbs. 4 oz.
3. 1 yd. 1 ft. 2 in.
4. 7 gals. 2 qts.
5. 30 min. 42 sec.
6. 28 gals. 3 qts.
7. 3 gals. 2 qts.
8. 1 gal. 3 qts.
9. 32 quarts
10. 6 feet 7½ inches

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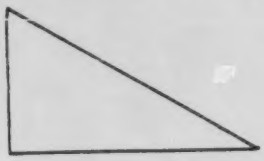
Objective #24: The student will be able to identify basic geometric figures and their parts.

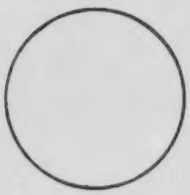
## Pre-Test

### Identifying Geometric Figures and Their Parts

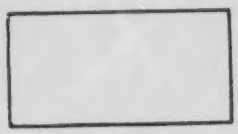
Identify the following figures:

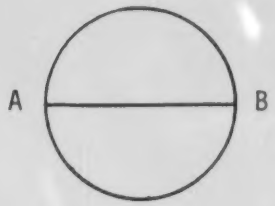
1.  _____

2. _____

3.  _____

4. _____

5.  _____

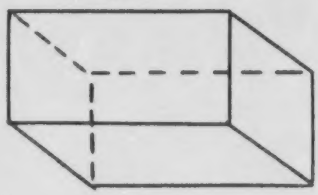
6. 


What is line segment $\overline{AB}$ called? _____

7. Draw a circle and identify its radius.

8. Draw a rectangle and identify the length and width.

9. Label the length, width, and height of the figure below.



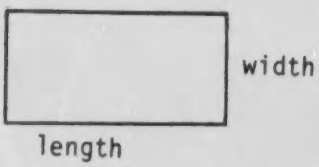
10. Draw an isosceles trapezoid.

## Answers

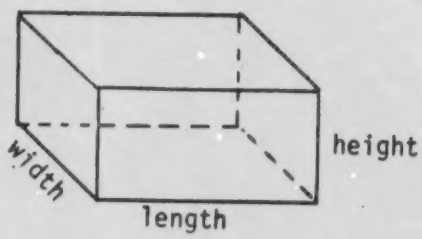
1. Triangle
2. Square
3. Circle
4. Trapezoid
5. Rectangle
6. Diameter

7.

8.




9.




10.

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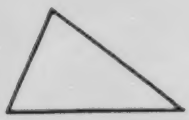
## Review Exercises

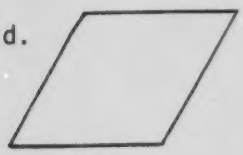
### Identifying Geometric Figures and Their Parts

Match the following geometric figures with their proper names:

a. 

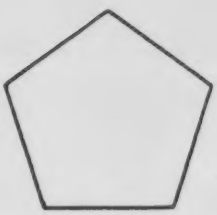
b.

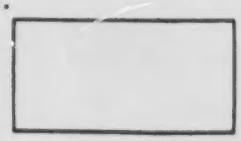
c.

d. 

e.

f.

g. 

h. 

1. rectangle
2. parallelogram or rhombus
3. ellipse
4. square
5. trapezoid
6. triangle
7. pentagon
8. circle

## Answers

a - 6

b - 8

c - 5

d - 2

e - 3

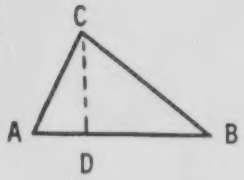
f - 4

g - 7

h - 1

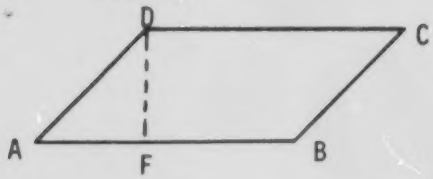
## Review Exercises

### Identifying Geometric Figures and Their Parts

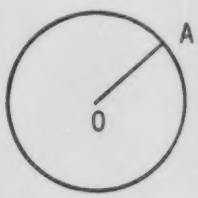
9. 


(a) Line segments AB; BC; and AC are called _____ of the triangle.

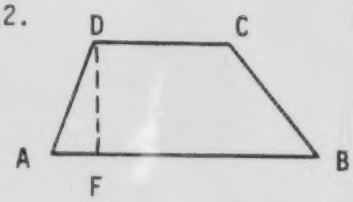
(b) Line segment CD is called the _____ of the triangle.

10. 


The line segment $\overline{DF}$ is called the _____ of the parallellogram ABCD.

11. 


The distance from the center "O" to a point on the circle "A," is called the _____ of the circle.

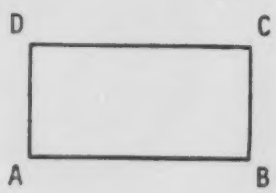
12. 


(a) The bases of the trapezoid are _____ and _____.

(b) The height is segment _____.

13.

Draw a diameter for the circle on the left.

14. 


The rectangle ABCD has a width of 3 inches and a length of 5 inches. How long is side BC?

_____

## Answers

9. (a) sides

   (b) height or altitude

10. height

11. radius

12. (a) $\overline{AB}$ and $\overline{DC}$

    (b) $\overline{DF}$

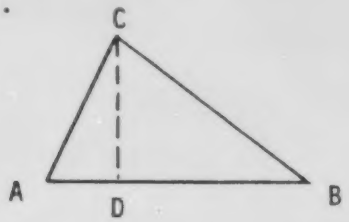
13.


14. 3 inches

## Post-Test

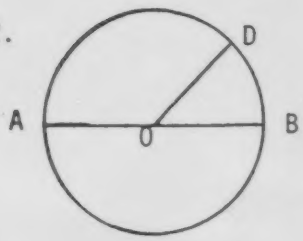
### Identifying Geometric Figures and Their parts

Identify each of the following figures and name the parts asked for:

1. 

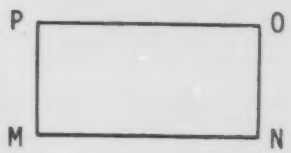

(a) Figure ABC is a _____.

(b) Line segment $\overline{CD}$ is the _____.

2. 

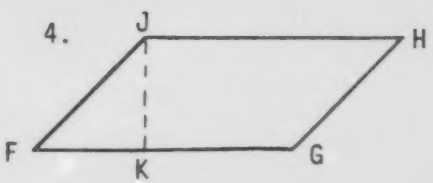

(a) Line segment AB is the _____ of the circle.

(b) Line segment OD is the _____ of the circle.

3. 

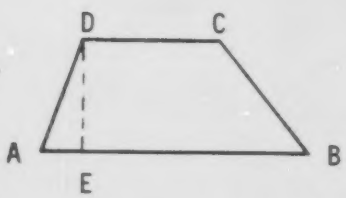

(a) Figure MNOP is called a _____.

(b) Line segment $\overline{MN}$ is the _____.

4. 


(a) Figure FGHJ is called a _____.

(b) Line segment JK is called the _____.

5. 


(a) Figure ABCD is called a _____.

(b) $\overline{AB}$ and $\overline{CD}$ are the bases of the figure, DE is called the _____.

## Answers

1. (a) Triangle
   (b) Height or altitude

2. (a) diameter
   (b) radius

3. (a) rectangle
   (b) length

4. (a) Parallelogram
   (b) Height

5. (a) Trapezoid
   (b) Height or altitude

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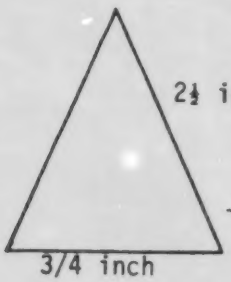
Objective #25: The student will be able to compute the perimeter of simple geometric figures.

## Pre-Test

### Computing Perimeters

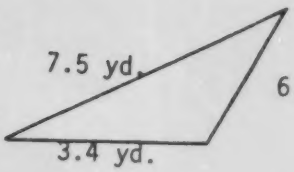
Compute the perimeters of the following figures:

1. Triangle



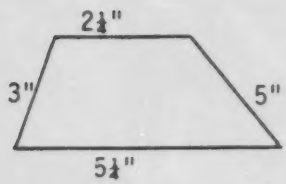

_____

2. Triangle



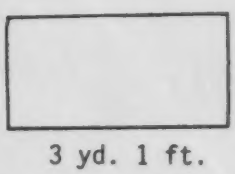

_____

3. Trapezoid



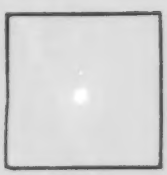

_____

4. Rectangle




_____

5. Square




_____

## Answers

1. 5 3/4 inches

2. 17.1 yards

3. 15 1/2 inches

4. 11 yards 1 foot

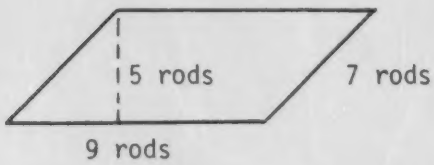
5. 12 feet 8 inches

## Pre-Test

### Computing Perimeters

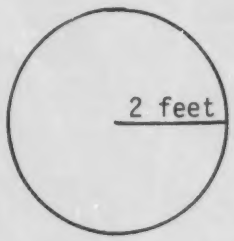
Compute the perimeters of the following figures:

6. Parallelogram



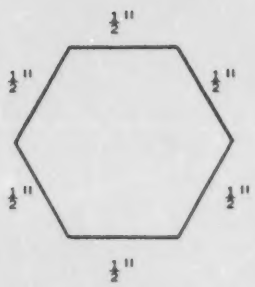

_____

7. Circle



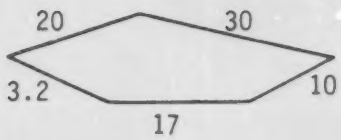

_____

8.




_____

9.




_____

10. A farmer wishes to fence in a pasture that is in the shape of a rectangle. He measures the length to be 301 yards 2½ feet and the width 101 yards 1 foot. How much fencing should he buy?

Answers

6. 32 rods

7. 12.56 feet

8. 3 inches

9. 80.2

10. 806 yards 1 foot

## Review Exercises

### Computing Perimeters

I. Compute the perimeters of the following squares with sides measuring:

(a) 3 inches _____ (b) 3.2 inches _____

(c) 3 feet 1 inch _____ (d) 2½ feet _____

(e) 3 yd. 1 ft. _____ (f) 5280 feet _____

II. Compute the perimeters of the following rectangles with given lengths and widths:

(a) length 3.2 in.
width 1.6 in._____

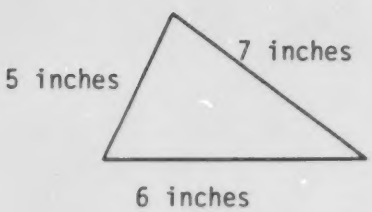
(b) length 3.16 feet
width 2.01 feet _____

(c) length 4 1/3 yds.
width 2 1/2 yds._____

(d) length 4 feet 8 in.
width 3 feet 5 in. _____

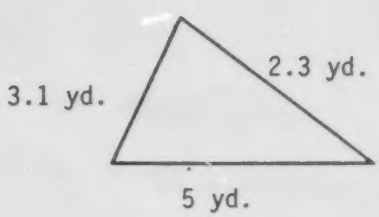
III. Compute the perimeter of the following triangles:

a.



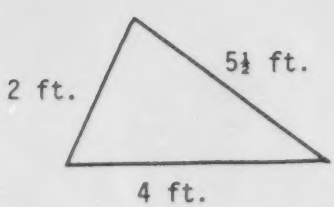

_____

b.



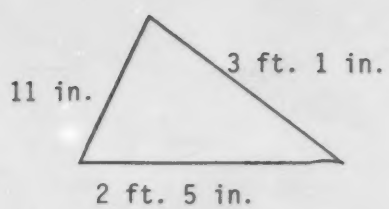

_____

c.




_____

d.




_____

## Answers

I. (a) 12 inches or 1 foot

(b) 12.8 inches of 1 foot .8 inches

(c) 12 feet 4 inches

(d) 10 feet

(e) 13 yards 1 foot

(f) 21,120 feet or 4 miles

II. (a) 9.6 inches

(b) 10.34 feet

(c) 13 2/3 yards

(d) 16 feet 2 inches

III. (a) 18 inches

(b) 11 1/2 feet

(c) 10.4 yards

(d) 6 feet 5 inches

## Review Exercises

### Computing Perimeters

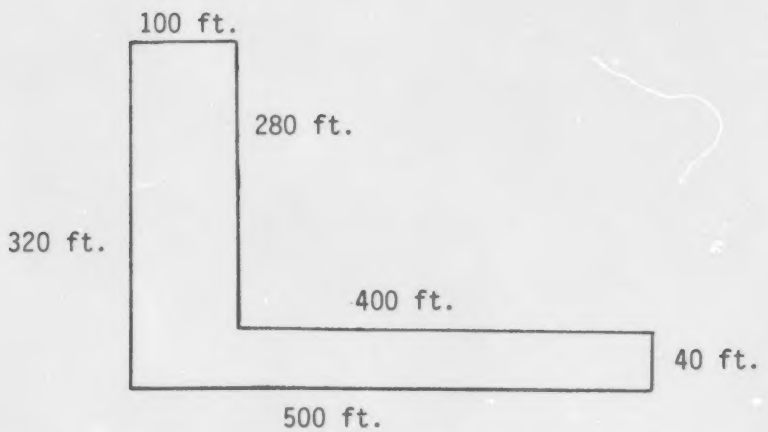
IV. Compute the circumference (perimeter) of the following circles with the given lengths. Use = 3.14

(a) radius - 3 ft. _____ (b) radius 2.9 feet _____

(c) diameter - 6½ feet_____ (d) diameter 5.5 yards _____

V. A contractor gets paid 30¢ a foot for laying baseboard around a room pictured below. How much should he charge?

_____



## Answers

IV. (a) 18.84 feet

(b) 18.212 feet

(c) 20.41 feet

(d) 17.27 yards

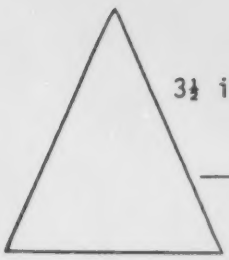
V. $492.00

## Post-Test

### Computing Perimeters

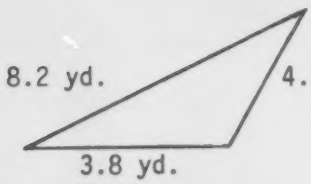
Compute the perimeters of the following figures:

1. Triangle



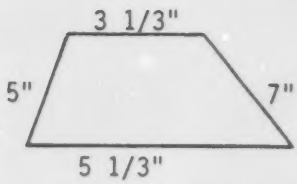

_____

2. Triangle



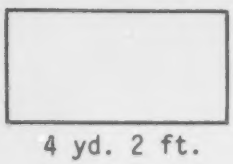

_____

3. Trapezoid



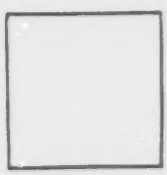

_____

4. Rectangle




_____

5. Square




_____

## Answers

1. 9 inches
2. 16.5 yards
3. 20 2/3 inches
4. 16 yards 2 feet
5. 13 feet 4 inches

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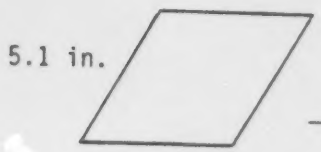
Post-Test

Computing Perimeters

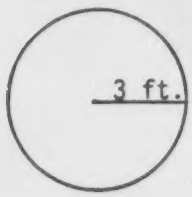
Compute the perimeters of the following figures:

6. Rhombus



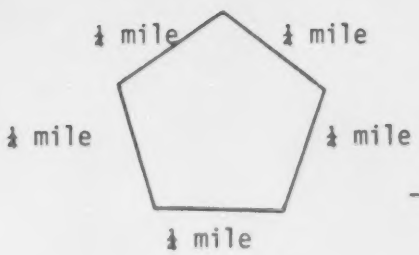

_____

7. Circle



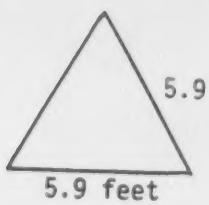

_____

8.




_____

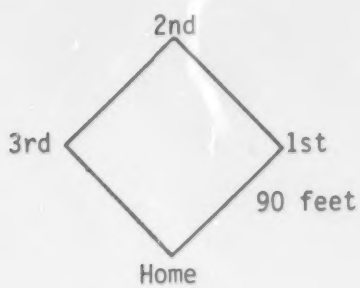
9. Equilateral Triangle




_____

10. How far does a base runner travel when he hits a home run?

_____



Answers

6. 20.4 inches
7. 18.84 feet
8. 1 1/4 miles
9. 17.7 feet
10. 360 feet

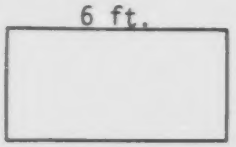
Objective #26: The student will be able to compute areas of geometric figures and find solutions of problems related to these areas.

## Pre-Test

### Computing Areas

Find the Area of the following geometric figures:

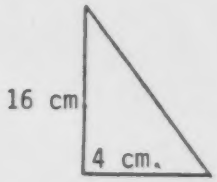
1. Rectangle with dimensions 6 ft. by 4 ft.:




_____

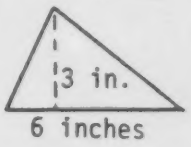
2. Right triangle with dimensions: base 4 cm, height 16 cm.:

_____




3. Triangle with dimensions: base 6 inches, altitude 3 inches:

_____




4. Circle with radius of 21 ft. Let $\pi = \frac{22}{7}$

_____

5. Circle with radius of 4 cm. Let $\pi = 3.14$

_____

## Answers

1. 24 square feet
2. 32 square cm.
3. 9 square inches
4. 1,386 square feet
5. 50.24 square cm.

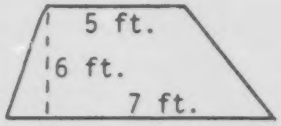
180

Pre-Test

Computing Areas

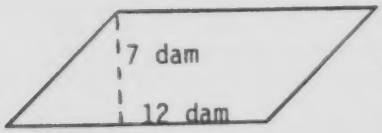
Find the Area of the following geometric figures:

6. Trapezoid with dimensions: bases 5 feet and 7 feet, height 6 feet.




_____

7. Parallelogram with dimensions: length 12 dam, height 7 dam:



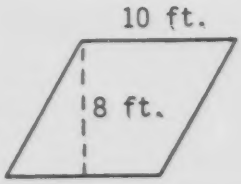

_____

8. Square with side of 20 feet:

_____

9. Rhombus with side 10 feet and height of 8 feet:

_____




Practical Application:

10. Find the cost of sodding a rectangular piece of ground which is 40 feet by 20 feet at 80 cents per square foot.

## Answers

6. 36 square feet

7. 84 square dam

8. 400 square feet

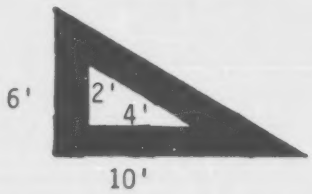
9. 80 square feet

10. $640.00

## Review Exercises

### Computing Areas

1. Find the area of shaded region of the triangle whose dimensions are 6 ft. by 10 ft. and 2 ft. by 4 ft.:




_____

2. Find the area of a rectangle whose length is 40 feet and width is 3 feet: _____

3. A rectangular lot 100 ft. by 80 ft. sold for $20,000. Find the cost per square foot: _____

4. A plastic top is needed to cover a circular swimming pool. If the radius of the pool is 14 feet, how many square feet of plastic is needed? _____

5. The outside dimensions of a rectangular picture frame are 6 inches by 8 inches. The inside dimensions are 4 inches by 6 inches. Find the area of the frame? _____

6. Carpet costs $18.00 per square yard. Find the cost to carpet a floor 5 yds. by 8 yds.: _____

7. Find the area of a square whose side is 3.2 inches: _____

8. If it costs $2.25 per square foot to have a cement driveway poured, find the cost of having a driveway 40 ft. by 10 ft. poured: _____

9. Find the area of a trapezoid whose bases are 8 feet and 6 feet respectively and has a height of 10 feet. _____

10. Find the area of a parallelogram whose length is 12 cm. and height is 4 cm.: _____

## Answers

1. 26 square feet
2. 120 square feet
3. $2.50 per square foot
4. 616 square feet
5. 24 square inches
6. $720.00
7. 10.24 square inches
8. $900.00
9. 70 square feet
10. 48 square cm.

Post-Test

Computing Areas

Find the area of the following geometric figures:

1. Triangle: Base 18 inches, height 4 inches _____

2. Square: side 3 cm. _____

3. Circle: Radius equal to 7 inches. let $\pi = \frac{22}{7}$ _____

4. Circle: Radius equal to 6 dm. let $\pi = 3.14$ _____

5. Trapezoid: Bases 4 ft. and 2 ft. and height of 6 ft. _____

6. Parallelogram: Length of 6 dm and height 4 dm _____

7. If carpet costs $20 per square yard, how much does it cost to carpet a room 7 yds. by 5 yds.? _____

8. How much would it cost to cement a driveway at $2 per square foot if the driveway is to be 30 feet by 12 feet? _____

9. If one pound of grass seed will seed an area of 400 square feet, how many pounds will be used for a lawn 60 feet by 20 feet? _____

10. Find the area of a rhombus with a side 2 inches and a height of 1 inch. _____

## Answers

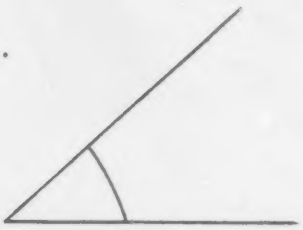
1. 36 square inches.
2. 9 square cm.
3. 154 square inches
4. 113.04 square dm.
5. 18 square feet
6. 24 square dm.
7. $700.00
8. $720.00
9. 3 pounds
10. 2 square inches

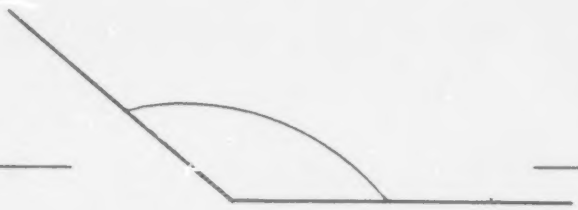
Objective #27: The student will be able to measure and construct angles of a given size.

Pre-Test

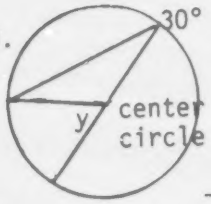
Measuring and Constructing Angles

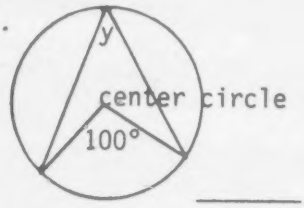
Use a protractor and measure each angle:

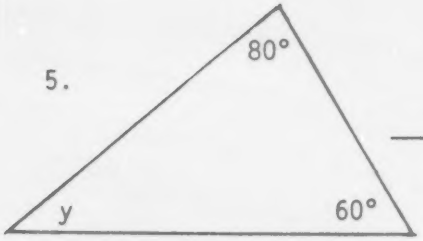
1. 

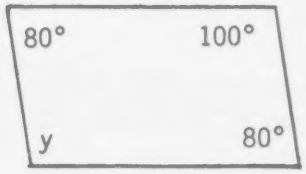
2. 

Find the measure of each angle "y" by mathematical concepts:

3. 


4. 


5. 


6. 


Construct angles of the following measure:

7. 48° 8. 110° 9. 240° 10. 180°

## Answers

1. 42
2. 140
3. 60
4. 50
5. 40
6. 100
7 - 10. Check answers with protractor

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## Review Exercises

### Measuring and Constructing Angles

1. If you want a rectangle shape for a patio, how many degrees are there in each corner? _____

2. Jane is going to make a rug with various colored triangles, each of equal length sides. How many degrees in the interior angles? _____

3. What shape should you use to get the greatest area of a given length of material. (a) rectangle (b) square (c) triangle (d) circle

4. State the names of the following size angles:

   (a) less than 90° (b) 90° (c) greater than 90° but less than 180°

   _____ _____ _____

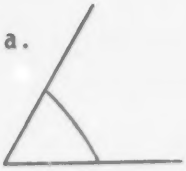
   (d) 180° (e) greater than 180°

   _____ _____

5. Construct angles of the following measure:

   (a) 60° (b) 45° (c) 90° (d) 110° (e) 240° (f) 315°

6. Find the measure of the following angles:

a. 

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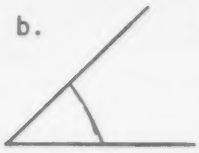
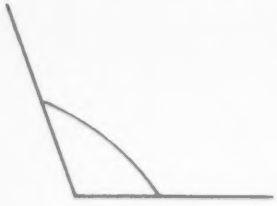
b. 

_____

c.

_____

d. 

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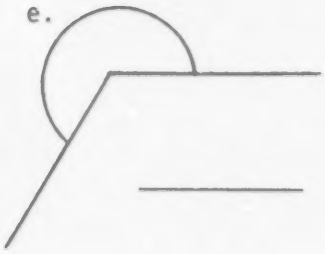
e. 

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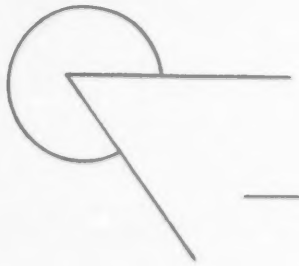
f. 

_____

## Answers

1. 90
2. 60
3. Circle
4. (a) acute
   (b) right
   (c) obtuse
   (d) straight
   (e) reflex
5. Answers are problem 6
6. Answers are problem 5

## Post-Test

### Measuring and Constructing Angles

By use of a protractor measure each angle X

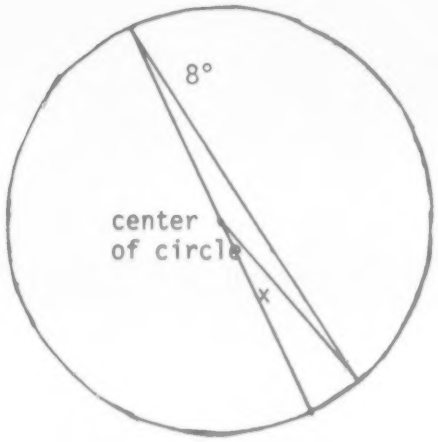
1.

2.

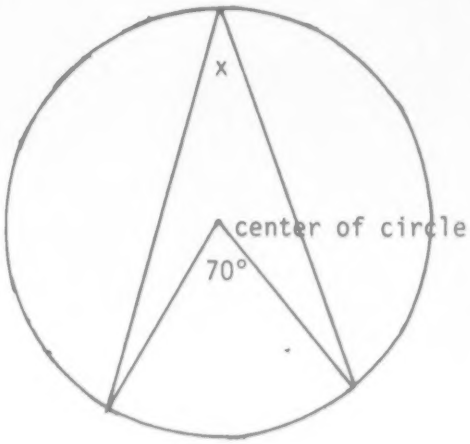
3.

Determine the measure of angle X by means of mathematical concepts:

4.




5.




6. How many degrees in the sum of the interior angles of a triangle? _____

7. In a parallelogram ABCD which angles are equal? _____

Construct the following size angles:

8. 40°

9. 160°

10. 90°

## Answers

1. 60
2. 90
3. 100
4. 16
5. 35
6. 180
7. a and c, b and d,
8. - 10. Check with protractor

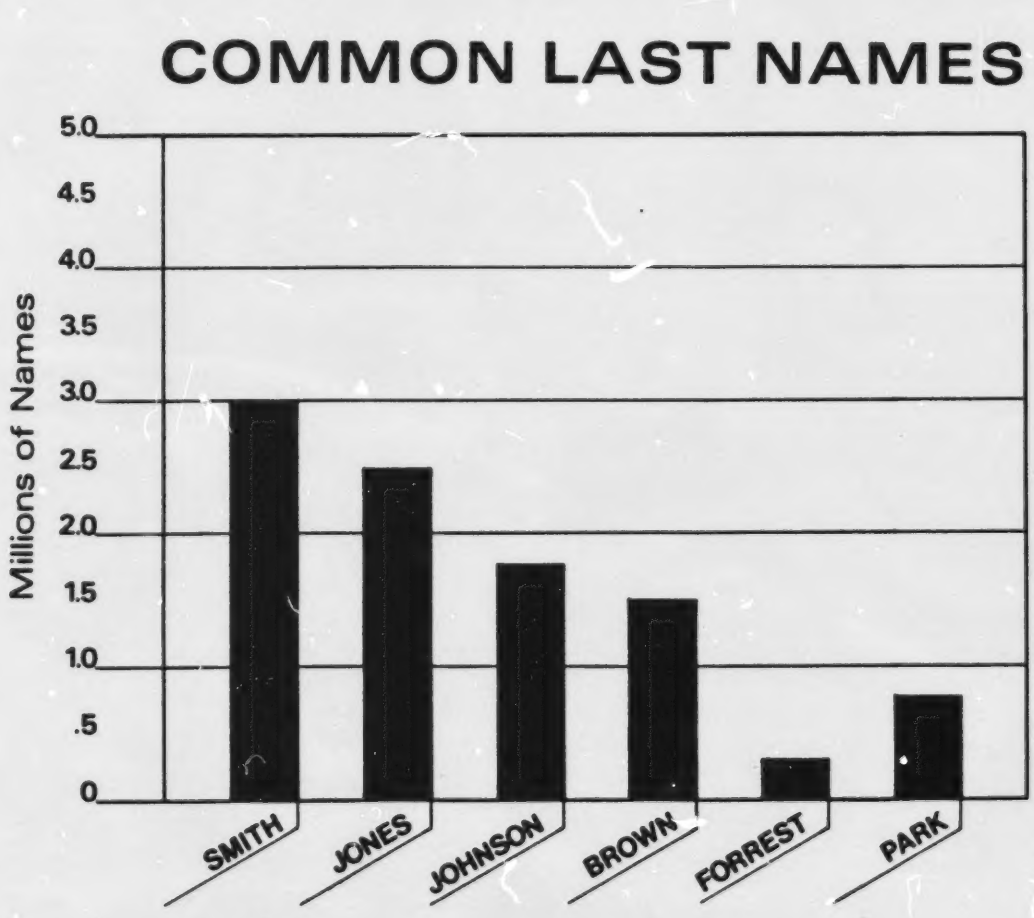
Objective #28: The student will be able to read and interpret simple graphs.

Pre-Test

Reading and Interpreting Graphs

Refer to graph, Common Last Names:

1. How many people are named Smith? _____ Johnson?_____ Park?_____
2. How many more people are named Smith than Jones? _____
3. Which names are listed more than 2 million times? _____
4. What is the title of the bar graph? _____



## Answers

1. Smith: 3 million;

   Johnson: 1.75 million;

   Park: 3/4 million

2. .5 million

3. Smith, Jones

4. Common Last Names

## Pre-Test

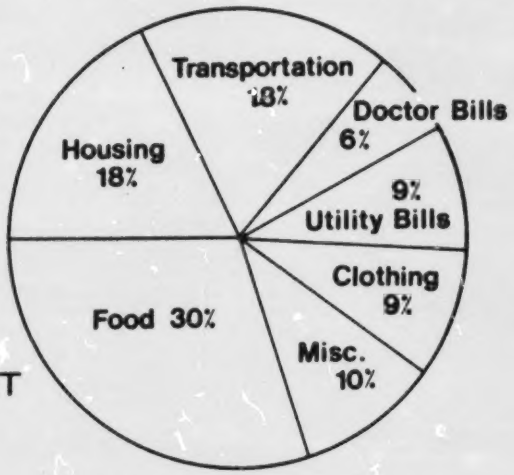
### Reading and Interpreting Graphs

Refer to circle graph and a family annual income of $20,000 for a family of four:

5. How much is spent on food? _____

6. How much more is spent for food than housing? _____

7. How much is spent on each individual for clothing? _____



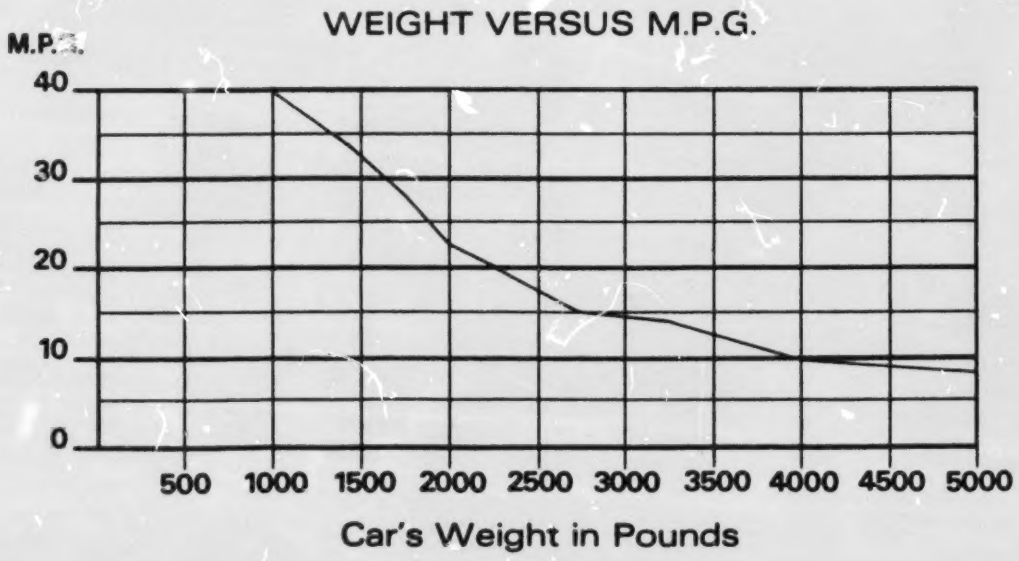

FAMILY BUDGET

Refer to Broken Line Graph:

8. What is the weight of the car that gets 20 miles per gallon? _____

9. How many more mpg will you get on a car weighing 1000 lbs. compared to a car weighing 4000 lbs.? _____

10. What is given on the vertical portion of the graph? _____



Answers

5. $6,000.00
6. $2,400.00
7. $450.00
8. 2300 lbs., approx.
9. 30 m.p.g.
10. m.p.g.

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## Review Exercises

### Reading and Interpreting Graphs

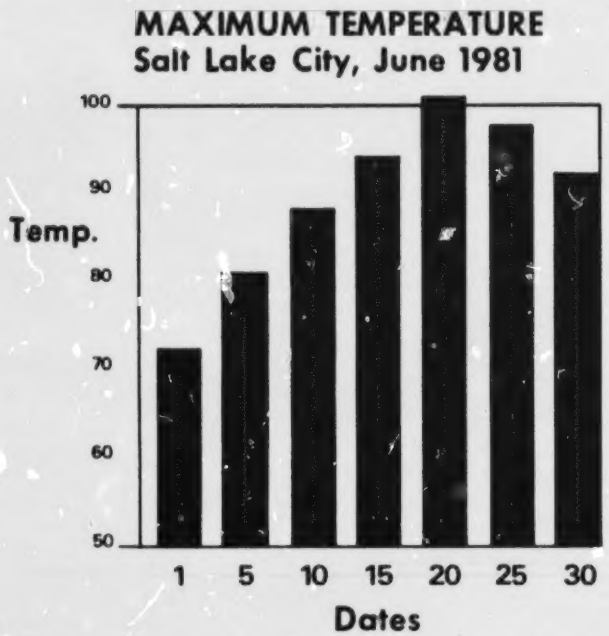
1. Organize the data and make both a vertical and horizontal bar graph showing maximum temperatures for the month of June 1981 in Salt Lake City, Utah.

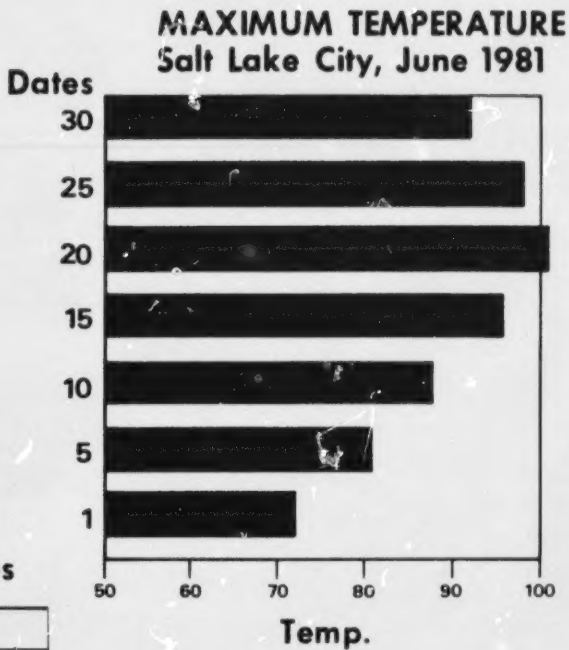
| | |
|---|---|
| 1 June | 72° |
| 5 June | 81° |
| 10 June | 88° |
| 15 June | 96° |
| 20 June | 101° |
| 25 June | 98° |
| 30 June | 92° |

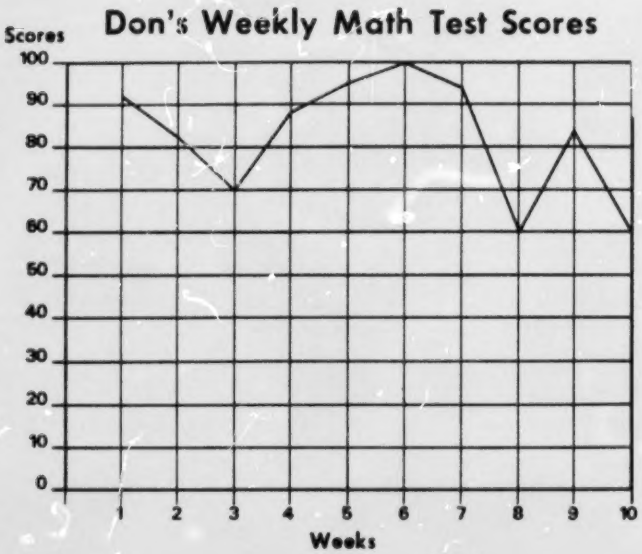
2. Organize data and make a broken line graph for Don's scores on 10 weekly math tests.

| | |
|---|---|
| Test 1 | 92 |
| Test 2 | 82 |
| Test 3 | 70 |
| Test 4 | 88 |
| Test 5 | 95 |
| Test 6 | 100 |
| Test 7 | 94 |
| Test 8 | 60 |
| Test 9 | 84 |
| Test 10 | 60 |

Answers

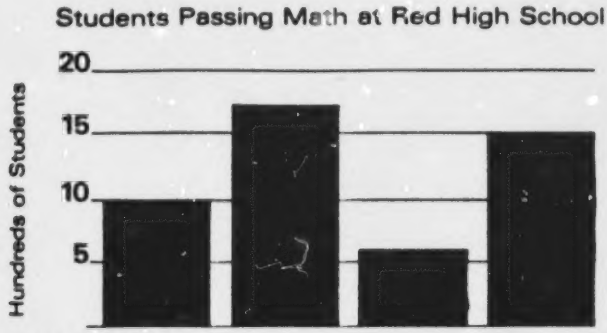

MAXIMUM TEMPERATURE
Salt Lake City, June 1981
Temp.
100
90
80
70
60
50
1 5 10 15 20 25 30
Dates


MAXIMUM TEMPERATURE
Salt Lake City, June 1981
Dates
30
25
20
15
10
5
1
50 60 70 80 90 100
Temp.


Don's Weekly Math Test Scores
Scores
100
90
80
70
60
50
40
30
20
10
0
1 2 3 4 5 6 7 8 9 10
Weeks

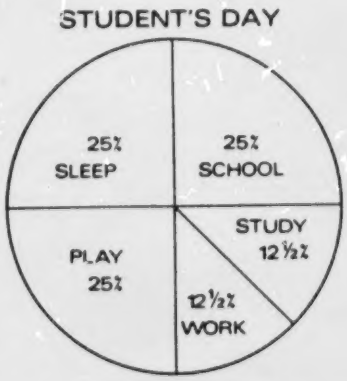
Post-Test

Reading and Interpreting Graphs




Refer to Bar Graph "Students Passing Math."

1. How many students passed math in 1966? _____
2. Which year did the most students pass math? _____
3. How many more students passed math in 1981 than in 1966? _____
4. In which years did more than 1000 students pass math? _____

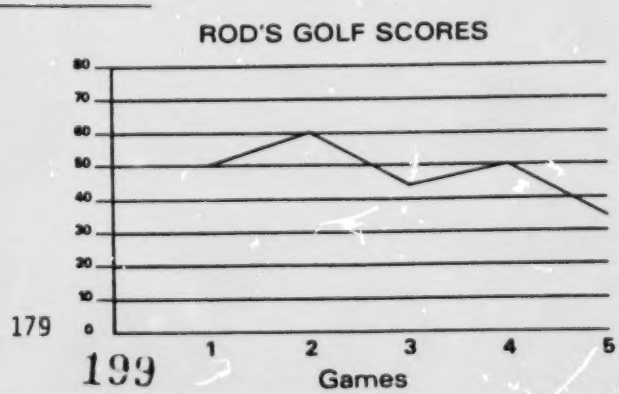



Refer to Circle Graph "Student's Day."

5. How many hours does a student play? _____
6. How many more hours are spent in school than work? _____
7. How many hours are spent in study? _____

Refer to Line Graph "Rod's Golf Scores."

8. In which game did Rod get his lowest score and what was it? _____
9. How much did he improve from game one to game 5? _____
10. What was his worst score? _____



Answers

1. 900
2. 1972
3. 300
4. 1972-1981
5. 6 hours
6. 3 hours
7. 3 hours
8. Game 5 - 34
9. 50 tc 34, 16 strokes
10. 60

200

| TITLE: Adult Education Basic Arithmetic Computation Skills | TOPIC: Basic Concepts of Metric System | 117-029 |
|---|---|---|

Objective #29: The student will be able to use the basic concepts of metric system.

Pre-Test

Basic Concepts of Metric System

1. Make the equations a true statement:

   (a) 1 km = _____ m (b) 9.5 km = _____m (c) 8.7 m = _____cm

   (d) 80 mm = _____m (e) 7.6 cm = _____dam (f) 40 hm = _____km

   (g) .1 m = _____mm (h) .002 mm = _____m

2. Find the volume of a rectangular solid with dimensions

   (a) L - 2 cm, W - 3 cm, H - 8 cm

   (b) L - 6 m, W - 2 m, H - 5 m

3. If one liter equals 1000 ml and 1000 cc equals one liter then one cc equals how many ml of water? _____

4. Make the equations a true statement:

   (a) 3.6 ml = _____l (b) .76 l = _____ml (c) 825 ml = _____l

   (d) 18,868 ml = _____l

5. Make the equation a true statement:

   (a) 1 kg = _____g (b) 2 kg = _____g (c) 100 g = _____kg

   (d) 1,546 mg = _____g (e) 1,000 mg = _____g

   (f) 1,768 g = _____kg (g) 770 g = _____dag

   (h) 880 g = _____kg

6. If water boils at 100° Celsius and freezes at 0° Celsius, is it cold or hot or just right at 20° C?_____

7. At 12 o'clock noon the temperature was 22° Celsius and at 2 a.m. it was - 5° C. How many degrees did it drop? _____

8. What is the length of the diameter of a quarter to the nearest mm? _____ cm? _____

9. How many liters of gasoline will a rectangular solid can hold if the dimensions are 20 cm by 15 cm by 12.7 cm? Remember 1000 cc in a liter. _____

10. Soda water costs 75¢ per 500 ml. How much would you pay for a bottle which contains 2.5 l? _____

## Answers

1. (a) 1000 meters
   (b) 9500 m.
   (c) 870 cm.
   (d) .08 m.
   (e) .0076 dam
   (f) 4 km.
   (g) 100 mm.
   (h) .000002 m.
2. (a) 48 cubic centimeters
   (b) 60 cubic meters
3. 1 ml.
4. (a) .0036 l.
   (b) 760 ml.
   (c) .825 l.
   (d) 18.868 l.
5. (a) 1000 g.
   (b) 2000 g.
   (c) .1 kg.
   (d) 1.546 g.
   (e) 1 g.
   (f) 1.768 kg.
   (g) 77 dag.
   (h) .880 kg.
6. just right
7. 27°
8. 24 mm., 2.40 cm.
9. 3.81
10. $3.75

## Review Exercises

### Basic Concepts of Metric System

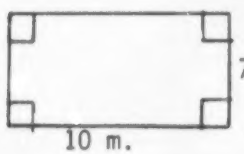
Make true sentences:

1. (a) 125 cm = _____ m (b) 8.7 m = _____ cm (c) 66 mm = _____ cm

   (d) 3.8 cm = _____ dm (e) 2000 m = _____ hm (f) 6.35 km = _____ m

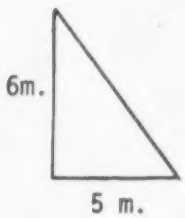
Find the following areas:

2. (a)




_____

(b)

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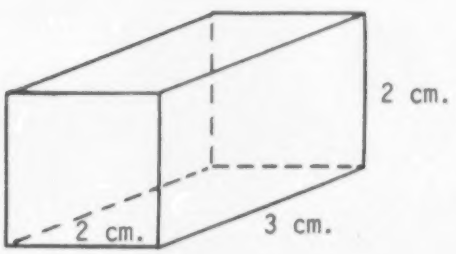
3.




(a) How many cc? _____
(b) How many ml? _____
(c) How many kilograms? _____

4. Is it too cold, too hot or comfortable?

   (a) 40° C _____ (b) 22° C _____

   (c) 10° C _____ (d) 35° C _____

Make a true statement:

5. (a) 2 kg = _____ g (b) 5 kg = _____ g

   (c) 2165 kg = _____ g (d) .006 kg = _____ g

   (e) 3560 g = _____ kg (f) 28 mc = _____ g

Make a true statement:

6. (a) .4 ml = _____ l (b) 80 kl = _____ l

   (c) 4.56 l = _____ kl

## Answers

1. (a) 1.25 m.
   (b) 870 cm.
   (c) 6.6 cm.
   (d) .0038 dm.
   (e) 20 hm.
   (f) 6350 m.
2. (a) 760 square meters
   (b) 100 square meters
3. (a) 12 cc.
   (b) 12 ml.
   (c) .012 kg.
4. (a) hot
   (b) comfortable
   (c) cold
   (d) hot
5. (a) 2000 g.
   (b) 5000 g.
   (c) 2,165,000 g.
   (d) 6 g.
   (e) 3.56 kg.
   (f) .028 g.
6. (a) .0004 l.
   (b) 80,000 l.
   (c) .00456 kl.

## Post-Test

### Basic Concepts of Metric System

Make the equation a true statement:

1. (a) 4 km = _____m (b) 8.2 km = _____m

   (c) 2.1 m = _____cm (d) 86 mm = _____cm

Find the volume of a rectangular solid:

2. (a) length - 42 cm, width - 2 cm, height - 1 cm _____

   (b) length - 4 m, width - 3 m, height - 2 m _____

3. There are 1000 cc in a liter and 1000 ml in a liter. How many cc of water are there in 20 ml of water? _____

Make the equation a true statement:

4. (a) 4 ml = _____l (b) .21 l = _____ml (c) 700 ml = _____l

   (d) 1246 ml = _____l

5. (a) 50 kg = _____g (b) 25 mg = _____g (c) 200 g = _____kg

   (d) 2 cm = _____dm

Practical Application:

6. 22° C is normal room temperature - Is it too cold, too hot, or comfortable at 35° C? _____

7. At 8:00 a.m. the temperature was 20° C. At 10:00 p.m. it was - 2° C. How many degrees did the temperature drop? _____

8. How many liters of water will a jug hold if it has a 2000 cc capacity? _____

9. What is the width of your thumb to the nearest cm? _____

10. If soda water cost 80¢ per 400 ml., how much will you pay for a bottle which contains 2 l? _____

## Answers

1. (a) 4000 m.
   (b) 8,200 m.
   (c) 210 cm.
   (d) 8.6 cm.
2. (a) 84 cubic centimeters
   (b) 24 cubic meters
3. 20 cc.
4. (a) .004 l.
   (b) 210 ml.
   (c) .7 l.
   (d) 1.246 l.
5. (a) 50,000 g.
   (b) .025 g.
   (c) .2 kg.
   (d) .2 dm.
6. hot
7. 22°
8. 2 liters
9. Answers vary
10. $4.00

Objective #30: The student will be able to round numbers off to the nearest place value desired.

Pre-Test

Rounding Numbers

Round off the following numbers to the nearest 10:

1. (a) 32 _____ (b) 183 _____ (c) 286 _____
   (d) 179 _____ (e) 504 _____

Round off the following numbers to the nearest 100:

2. (a) 132 _____ (b) 283 _____ (c) 386 _____
   (d) 32 _____ (e) 1468 _____

Estimate to the nearest 10 and then find the sum:

3. (a) 69 (b) 36 (c) 126 (d) 1264
   91 48 48 58
   + 37 96 + 34 + 34
   + 32

Estimate to the nearest 100 and then find the sum:

4. (a) 162 + 397 + 313 _____ (b) 134 + 86 + 791 + 366 _____

Round off to the nearest cent:

5. (a) $128.013 _____ (b) $245.905 _____
   (c) $74.53456 _____

Determine Rod's weekly wages to the nearest cent. His hourly rate is $6.85.

6. (a) 38.5 hrs. _____ (b) 32.25 hrs._____ (c) 41.75 hrs. _____

Find the weekly wages to the nearest cent:

7. (a) $3.05 per hour for 41 hrs. _____
   (b) $5.65 per hour for 39.5 hrs. _____

Round $125.366 to the nearest:

8. (a) cent _____ (b) dime _____
   (c) dollar _____ (d) 10 dollars _____

9. Round $125,684 to the nearest $1000: _____

Find the hourly rate to the nearest dollar:

10. $129.60 for 40½ hours _____

## Answers

1. (a) 30
   (b) 180
   (c) 290
   (d) 180
   (e) 500
2. (a) 100
   (b) 300
   (c) 400
   (d) 0
   (e) 1500
3. (a) 200, 197
   (b) 220, 212
   (c) 210, 208
   (d) 1350, 1356
4. (a) 900, 872
   (b) 1400, 1377
5. (a) $128.01
   (b) $245.91
   (c) $74.53
6. (a) $263.73
   (b) $220.91
   (c) $285.99
7. (a) $125.05
   (b) $223.18
8. (a) $125.37
   (b) $125.40
   (c) $125
   (d) $130
9. $126,000
10. $3.00 per hour

## Review Exercises

### Rounding Numbers

Place value chart:

| Thousands | Hundreds | Tens | Ones | . | Tenths | Hundredths | Thousandths | Ten Thousandths |
|---|---|---|---|---|---|---|---|---|
| 4 | 3 | 6 | 2 | . | 4 | 1 | 2 | 5 |

With the place value chart above round off the following numbers to the nearest:

| | | Hundreds | Tens | Ones | Thousandths |
|---|---|---|---|---|---|
| 1. | 564.3216 | _____ | _____ | _____ | _____ |
| 2. | 1564.1243 | _____ | _____ | _____ | _____ |
| 3. | 64.5894 | _____ | _____ | _____ | _____ |
| 4. | 22.6 | _____ | _____ | _____ | _____ |
| 5. | 54321.2 | _____ | _____ | _____ | _____ |

6. Determine weekly wages to nearest cent:

   (a) $2.50 per hr. for 38.5 hrs._____

   (b) $1.93 per hr. for 35½ hrs._____

7. Multiply each of the following by 1.5 and round off to nearest cent:

   (a) $2.20 _____ (b) $5.50 _____ (c) $3.72 _____

   (d) $5.65 _____

8. Find the weekly wages to nearest cent:

| (a) | (b) | (c) | (d) |
|---|---|---|---|
| $8.70 | $9.25 | $5.25 | $6.25 |
| x 40.5 | x 39.75 | x 31.5 | x 40 |

## Answers

1. 600, 560, 564, 564.322
2. 1600, 1560, 1564, 1564.124
3. 100, 60, 65, 64.589
4. 0, 20, 23, 22.600
5. 54,300; 54,320; 54,321; 54,321.200
6. (a) $96.25
   (b) $68.52
7. (a) $3.30
   (b) $8.25
   (c) $5.58
   (d) $8.48
8. (a) $353.35
   (b) $367.69
   (c) $165.38
   (d) $250.00

## Post-Test

### Rounding Numbers

1. Round off to the nearest 10:

   (a) 42 ____ (b) 182 _____ (c) 186 _____ (d) 86 _____

2. Round off to the nearest 100:

   (a) 356 ____ (b) 86 _____ (c) 1242 _____ (d) 40,162 _____

3. Estimate sum to the nearest 10:

   (a) 79 (b) 32
   91 37
   + 27 + 98

4. Estimate sum to the nearest 100:

   (a) 262 (b) 434
   397 86
   + 213 694
   + 386

5. Round off to the nearest cent:

   (a) $148.026 _____ (b) $456.803 _____

   (c) $174.546 _____

6. Determine Don's weekly wages to nearest cent. His hourly rate is $7.15:

   (a) 40.5 hrs._____ (b) 32.25 hrs. _____

   (c) 41.75 hrs. _____

7. Find weekly wages to the nearest cent:

   (a) $3.05 for 42 hrs. _____ (b) $5.75 for 25.25 hrs. _____

8. Round $336.856 to the nearest:

   (a) cent _____ (b) dime _____ (c) dollar _____

   (d) hundred dollars _____

9. Round $146,324 off to the nearest $1000: _____

10. Find hourly rate to nearest dollar:

    $135.15 for 40 hours _____

Answers

1. (a) 40
   (b) 180
   (c) 190
   (d) 90
2. (a) 400
   (b) 100
   (c) 1200
   (d) 40,200
3. (a) 200
   (b) 170
4. (a) 900
   (b) 1600
5. (a) $148.03
   (b) $456.80
   (c) $174.55
6. (a) $289.58
   (b) $230.59
   (c) $298.51
7. (a) $128.10
   (b) $145.19
8. (a) $336.86
   (b) $336.90
   (c) $337
   (d) $300
9. $146,000
10. $3.00

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Appendix

Table I

Weight Measure

16 ounces (oz) = 1 pound (lb)
2000 pounds = 1 ton
2,240 pounds = 1 long ton
100 pounds = 1 hundred weight

Dry Measure

2 pints (pt) = 1 quarts (qt)
8 quarts = 1 peck
4 pecks = 1 bushel

Square Measure

144 square inches = 1 square foot
9 square feet = 1 square yard
43,560 square feet = 1 acre
160 square rods = 1 acre
30¼ square yards = 1 square rod

Cubic Measure

1,728 cubic inches = 1 cubic foot
27 cubic feet = 1 cubic yard

Linear Measure

12 inches = 1 foot
3 feet = 1 yard
36 inches = 1 yard
5½ yards or 16½ feet = 1 rod
5280 feet = 1 mile

Counting Measure

12 units = 1 dozen (doz)
12 dozen = 1 gross

Liquid Measure

3 teaspoons (t) = 1 Tablespoon (T)
16 Tablespoons = 1 cup (c)
2 cups = 1 pint
2 pints = 1 quart
4 quarts = 1 gallon
7½ gallons = 1 cubic foot
32 ounces (fluid) = 1 quart
31½ gallons = 1 barrel

Time Measure

60 seconds = 1 minute
60 minutes = 1 hour
24 hours = 1 day
7 days = 1 week
52 weeks = 1 year
365 days = 1 year
366 days = 1 leap year